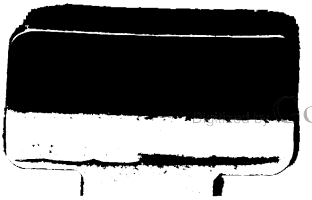
ACTIVISM

HENRY LANE ENO



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PRINCETON UNIVERSITY PRESS
PRINCETON, N. J.
LONDON: HUMPHREY MILFORD
OXFORD UNIVERSITY PRESS
1920

Published 1920

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PREFACE

It is not without hesitation that the present essay is submitted to the public.

It would seem, however, at this time especially, when all of us are groping for whatever stray gleams of light may come our way, that a possibly fresh point of view may not be entirely supererogatory. For in the midst of the cataclysmic changes taking place on every side many of us find ourselves forced to a new searching of the spirit. The older creeds and philosophies are crumbling or becoming metamorphosed. And in the intellectual world, no less than in the sphere of politics and industry, we are everywhere faced with the necessity of a revaluation of values.

In philosophy a newer Idealism, Realism, and Pragmatism, as well as such iconoclastic doctrines as Behaviorism in psychology, and the Relational theory in physics, have swept many of the long received dogmas into a historic past; while many old questions have been answered with surprising solutions, and many strange and hitherto unsuspected problems have been discovered to confront us.

To meet some of these newer conditions—to envisage some of these many problems from a possibly fresh angle—is the endeavor of the hypothesis here briefly outlined. The author is, nevertheless, acutely conscious of the tentative and sketchy char-

acter of this trial, as well as of its frequent shortcomings both in substance and in style.

It is, also, a cause of no small regret that it seems to have been necessary to use not a few new terms, in addition to several familiar words employed in such a fashion as to involve unusual connotations. The exigency in the development of a somewhat novel thesis, however, involving a descriptive terminology for which apparently there exists at present no accurate expressions, has forced the issue to a point where no practical alternative has been left. It can only be said in extenuation that as few strange words as possible have been used, and that a strenuous effort has been made to explain carefully these innovations.

Finally, the author's thanks are due to Professor Edward Gleason Spaulding for his helpful suggestions and logical criticism; to Professor Augustus Trowbridge for his assistance in the interpretation of modern physics; to Professor Howard C. Warren for his revision of the chapter on Consciousness; and, particularly, in remembrance, for the kindly advice, and the many critical notes jotted down, by the late William James—now some years ago—upon the margins of the original sketch of which the present essay is the outgrowth.

HENRY LANE ENO.

PRINCETON, NEW JERSEY,
May, 1920

CHAPTER 1.

FUNDAMENTAL CONCEPTIONS

THE universe of which we seem to be aware may be divided into three great classes—entities, relations, and processes.

Of these, entities and relations are fundamental; processes appear to be derivative, involving entities of some kind, relations of usually many kinds, but always, and especially, those relations to the time series which distinguish process as such.

As to the exact status of these classes, philosophers differ. As to their actuality, all philosophers agree. Every mode of thought possesses an expression for them. In physical science they are epitomized in matter, and in the relational complexes of space, time, and motion. As organisms we are conscious of them as existence, environment, and reaction; while in the poetic symbolism of the East they are known as being, wisdom, and power. They do not easily submit themselves to definition, for without cognizance of them no thinking is conceivable. Like Emerson's "Brahma", they include the thinker, his total environment, and his thought.

Yet, although the universe thus seems to fall into three main divisions, not all philosophers have been fully alive to this obvious fact. On the contrary they have, from the earliest times, nearly always

overemphasized some single aspect. "The World is eternal and immutable," said Father Parmenides (Entity); "All things flow away and nothing remains" said Heraclitus (Process); "Everything is relative, illusion—'Maya'" said Sankara (Relation); and their intellectual descendants are alive this very day. All things are generated from the immutable logical principles, says Russell (Realist); the whole universe is pure process, becoming, says Bergson (Pragmatist); everything is error and illusion, says Bradley (Idealist).[1] While, it is scarcely necessary to add, we possess every sort of philosophy exhibiting some more qualified overemphasis as the result of combinations and modifications of these extreme views.

But this universe of ours is in some ways at least not only threefold but also one, since after all it is a universe, ordered to some extent, so far as we have been able to explore it, and not a chaos. As a universe of total inclusion it is undoubtedly one, as well as in its character as a universe of discourse; while for many essential considerations science is forced to maintain that it is a uniformity, subject through-

[1] Bertrand Russell: The Principles of Mathematics. Cambridge University Press, 1903.

Henri Bergson: L'Evolution Créatrice. Félix Alcan, Paris, 1908.

F. H. Bradley: Appearance and Reality. Swan, Sonnenschein & Co., London, 1908.

out to inevitable laws. All monistic philosophical systems also, on speculative grounds, maintain its essential unity; and while their reasoning and conclusions may perhaps be found faulty, yet from their wide acceptance and traditional importance they cannot be ignored.

At the very start, therefore, should we care to discuss cosmology at all, we find ourselves confronted with the ancient but ever youthful problem of the one and the many. That the world is many is a fact that none but the solipsist can question; and even for him the content of his own mind is manifold. Moreover one does not argue with the solipsist, one puts him in a sanitorium.

Well; is the world also one? And if so, in what way and how much is it one?

We have seen that it is, pretty deeply at any rate, threefold, since we find everywhere the ultimate distinction between entities and relations, and, wherever time holds sway, those special relations between entity-complexes and moments in the time series which superadd the element of process. But can these great divisions into which it falls be united; can the three great classes of its elements be in any way subsumed under one unifying conception?

Now in attempting to answer this question we shall probably be forced to admit at once that any

such unifying conception, in our present state of ignorance, can be at best but a working hypothesis. That such an hypothesis should possess wide theoretic and empirical support, and that it should work —enable us to explain with its aid a greater number of difficulties than we could explain without it—is the most that reasonably can be expected. For the day of irrefutable philosophic systems is past.

A working hypothesis of this kind, furthermore, from its very nature as such, must draw its chief support from empirical experience—from the world as we actually seem to find it—not as we might find it or prefer to find it. Our philosophic point of view, therefore, will be in the main the point of view characterized as radical empiricism. Since we posit too, for our purpose at any rate, a real universe full of real entities, relations, and processes, it will also be a realistic philosophy avoiding as far as possible the ancient controversial problems as to whether the world is not after all merely appearance, illusion, or existent only in the mind of some Knower, or knowers. For whatever the ultimate character of the universe may be, it seems indisputable that at least it *appears* as real, and so constitutes for us at any rate a real appearance. If therefore to hold this view makes us naïve realists, we must let the soft impeachment lie, permitting ourselves cheerfully to be classed among the scien-

tists, the poets, the religious teachers, and the practical men generally, who do real illusory things in a world of real illusion.

Taking then the world in this way as it appears, we find it full of a number of things—physical things, mental things, and things which seem to be neither. In this world of actual experience, moreover, all of these things in their own various ways are efficient. They "make a difference" somewhere. Any one of these things also, in so far as it is conceivably to be found at all, may from the fact of its conceivability alone, if from no other reason, be in essential relation with some sort of process. It is quite unessential that such a thing should itself be a process, a change, or be dependent for its existence or efficiency upon other processes. An ideal entity such as a geometrical figure, a relation, or a relational complex, whether independently "real" or merely an intellectual construct, makes many differences, and among them differences in the world of process. It is of course evident that the efficiency of such unchangeables may be a non-causal efficiency, but that fact does not make them any less efficient. The existence, or "subsistence", of geometric triangles or circles not only is efficient in their own sphere of ideal space, but is equally efficient in determining the necessary course of the geometer's mental operations. Yet here the specific nature of a

process depends upon something which is not a process itself, a certain kind of change is determined by a certain kind of unchangeable.

Obviously however we also find processes depending upon each other, either in relations of non-causal efficiency, or causal relations, or both; in general the strictly causal efficiencies being confined to the world of physical processes and non-causal relations obtaining between non-physical processes, as, for example, the efficient correlations of the ideal processes in theoretical dynamics.

It seems evident therefore that any sort of entity, relation, process, or any complex of them, can be a determinant factor in some sort of process. It seems equally evident, also, that this determining efficiency does not depend upon the "existential" status of the determinants,—their status as existing in space or time—nor upon what their ultimate natures may be.

They may be entities or processes real or ideal, relations, universals, values—whatever you will. The fact of their just being, whatever they really are in themselves, constitutes a ground for some process taking a different course from the course which it would pursue if such things were not. If the time-space condition, for example, with its ubiquitous relations to other existences was not a fact, no process at all would be possible. If the numerical series were absent no classification nor

differentiation could obtain. Without "values" no art nor morals could be imagined. All these things are efficient. They are that by reason of which processes—series of changes—occur at all.

Now this particular sort of efficiency appears to be possessed by everything. There is nothing—even the conception of nothingness itself—from a chimera to an elephant, from an ideal or value to a nerve impulse, from a passing thought to an eternal platonic idea, but may be the ground for some sort of change; if in no other way, at least for the change incurred in our psychic or neural processes while thinking of it. And this special sort of efficiency we shall call, for want of some more accurate appellation, "Activity."

"Activity", says Bradley, "is the scandal of philosophy." But scandal or not, activity in this broad sense is inescapable. *For activity is that by reason of which change exists.*

Assuming, then, that all things conceivable can be considered as activities in this sense; that all members of the three fundamental classes, entities, relations, and processes possess at least this one element in common,—can be subsumed under this universal conception; what sort of world shall we find interpreted in this light? Will the hypothesis of such a common denominator make our universe any more intelligible? In short, will this hypothesis work?

CHAPTER 2

ACTIVITY AS AN UNDERLYING HYPOTHESIS

We have tentatively defined activity as "that by reason of which change exists", and we have advanced the hypothesis that everything in the universe of which we are aware is an activity in this sense of the term. Our hypothesis is, therefore, an underlying hypothesis which maintains that there exists a fundamental class of being to which all things belong. This definition of activity however is not equivalent to a definition of mere being. For it is possible that there might exist beings, out of any relation by means of which a difference could be made in the world of process, and of which we could not even conceive, that would not be activities. The conception is, therefore, empirically but not logically, all inclusive. It is held to be true, nevertheless, of every object discoverable or imaginable, to whichever of the three great subsidiary classes—entities, relations, or processes—that object may either exclusively or jointly belong.

The reason for so sweeping a contention is that it seems impossible to discover any fact which does not, in some way, fall into this universal category. It is obviously true of all entities, whether "real" objects, or ideal conceptions. They all "make a difference" somewhere. It is also true of relations. For even if

a relation "as such", for example "north of", seems to exist, or as Russell has it, "subsist" "nowhen and nowhere", it is nevertheless obviously a ground for a very specific sort of change, namely the physical motion or process required to traverse the distance between any material spot and that which it is "north of". In other words, the entirely definite process or change involved in "going north" can only occur because of such a relation as "north of". In this instance then "north of" is not only an activity in general, but a quite specific kind of activity upon which directly depends a quite specific kind of change. While if it is urged that the instance quoted is inadequate because the relation "north of" is a relation between purely physical objects, it can easily be shown that the contention advanced holds equally well of any other relations. For even if we take such a logical proposition as the Platonic "Goodness and Truth are one", where the terms are ideal entities, eternal and immutable, and the relations between them seemingly altogether independent of temporal or spacial implications, we still have a relational complex by reason of which changes occur. And this is so because the mere fact that there is such a proposition eventually entails a whole host of changes in any world in which goodness, truth, and change exist—produces, indeed, a quite specific reaction at this specific moment in my own organism.

The same is true of mathematical entities and relational complexes, as well as of the eternal heaven of transcendental verities generally. Whatever their philosophic status may be, in so far as they *are* at all they are activities. For discoverable relations and entities of every kind—not only physical and mental, but ideal as well,—are all things by reason of whose being some modification in the world of process is continually occurring, if in no other way, at least in the conscious processes of which they are at any time the content. The universe, therefore, in this broader sense is dynamic through and through. Part of it, and possibly no inconsiderable part, may be extra-temporal and in that way static, other parts may well be extra-spacial, many portions are undoubtedly extra-physical; yet all parts are efficient. Any of them by their inclusion in some particular "state of affairs" may be the ground for the modification of specific conditions. Nothing is dead. Nothing is inactive.

Although every conceivable thing is thus an activity, it is obvious however that, since the world is many as well as one, there must be many different sorts or conditions or manifestations of this activity. Our problem is therefore, (1) What kinds of activity are there? (2) How are these different kinds of activities related? And (3) what is the differentiating principle (or principles) according to which they can be distinguished?

Now since, according to our view, things are fundamentally efficiencies and the world thus capable of interpretation in the terms of a universal behaviorism, to specify every kind of activity would be simply to catalogue everything of which we could think. At this point, nevertheless, it may be well briefly to point out in a general way the particular sorts of activity of which the more important elements of our world consist.

We have already indicated broadly how entities both "real" and "ideal" as well as relations, whether taken as mere conceptions or objective realities, and of course processes, may be considered as activities. From this contention it follows that the entities and processes of the physical world must be activities also, since it is evident that, as direct objects of observation, they are continually the conditions of modification in any situation in which they are involved. And it is a familiar fact that science has already to a large extent reached the same conclusion. Physical motion is of course activity, since it is a specific form of change and directly the physical cause of other material motions. Physical entities likewise, aside from the obvious fact that, from their very nature as such, they must constitute grounds for change in other physical entities, are now generally considered to be fundamentally electrical in character, and if so, ultimately a form of process or

change. The chemical elements are no longer looked upon as static but as in a continual state of evolution and disintegration. The atoms of which the elements are supposed to be constructed are also no longer considered ultimates, but are in their turn held to be composed of electrons, or particles of electricity; while, finally, the electron itself is supposed to be some sort of vortex, whorl, knot, stress, or strain in an all-pervading ether; or, should there be no ether, an electrical unit, possibly complex, and probably subject to expansion, contraction and change. So even matter itself is supposed to be in a continual process of evolution and dissolution, and, *ipso facto,* all the specific material entities of which "matter" is the general designation.

The world however is full of a number of other things. Most closely associated with the physical world, perhaps, is the world of the mathematician, since it is more and more by the principles of that world especially that the physical scientist is enabled to find his way about among the bewildering multiplicity of phenomena. Whatever the real status of the subject matter with which the mathematician deals however, (and the mathematician himself certainly considers it "objective" and intractable enough) whether its content—number, form, variables, and the like—be as "real" as the pyramids, or merely useful conceptual ideals, they are, nevertheless, activities.

That, for example, there is such a thing as the numerical series at all, or that two and two equals four rather than five or seven, constitutes a reason for an innumerable host of specific processes, not only purely mathematical but material and mental as well. The undeniable fact, whatever its nature, that two and two make four is the direct reason for certain counting processes, (involving, of course, relational complexes,) besides "making a difference" —*i. e.* constituting a change—in countless other processes which would take place in some quite other fashion if this mathematical fact were anything else than what it is. In an assemblage where the presence of four units of any kind—ideal, mental, or physical —is an essential prerequisite for a particular condition, the fact that this assemblage may be obtained by gathering together two couples of these units is a determining factor in the assembling process. And it follows that the same condition must obtain for the more complex mathematical situations, as well as for the more inclusive propositions of logic generally. That "two things which equal a third thing in all respects are equal to each other" is a logical proposition which makes all sorts of differences to all sorts of processes, inaugurates many kinds of change; and this is so entirely irrespective of whether such a proposition is an objective fact, independent of the logician who formulated it, an

eternal verity shining forth in a transcendent heaven of universals, a law of thought, or merely a convenient method created by the human animal for making his world more easily intelligible. For let such a proposition masquerade in any guise it will, it nevertheless is an activity. It is a fact by reason of which modifications take place in the reasoning processes, if indeed it does not also "generate" additional logical propositions by implication.

It seems sufficiently clear from these instances that logical propositions in general must fall into the same category, for propositions are not only facts of some kind, but, as essentially facts of such a kind that by reason of them changes take place, they must, in order to be at all, be activities.

Naturally, it is but a step from mathematical entities and logical propositions to universals in general. And here again we meet with the same conditions. Universals, as we know, are general or "abstract" ideas, such as goodness, beauty, whiteness, and the like. Whether such "concepts" may be truly considered to possess some sort of being distinct from the particular facts whose classes they epitomize, as Plato held, is a question which need not be discussed here. It may fairly be said, however, that the words which designate them represent facts of some kind. For a universal is either a symbol for a certain group or class of particulars,

a hypostatization of that symbol into an entity which has no real status aside from that fact of hypostatization, or, as the class itself, a genuine entity in its own right. Yet, under any of these circumstances a universal is an activity.

As the name by which a group of particulars is designated, the mere fact that such a name can be given constitutes a ground for the naming process, while that such a name really exists creates a change in the reaction of all conscious organisms towards that group of which it is the designation—the symbol for the existence of the component parts as collectively a group at all. Specifically, for instance, can anyone seriously maintain that the possibility of the generic appelation "protozoa" or "vertebrate" does not *do* something—make a vital difference to the science of biology? On the contrary without classification, which means naming the separate animal groups, these sciences would not be possible. Again, the hypostatization itself (a process, too, even if no more than just that) has been the *raison d'être* of a whole series of philosophical processes—Platonism, New Realism, and the Scholastic discussions generally. Whereas if universals are, on the other hand, independently real, so much the more are they effective and dynamic entities, since without them the world of particulars could not exist at all.

Universals, then also, are facts of some kind, and as facts, no matter of what kind, are, as such, activities. The ideal conceptions of mathematics and the physical sciences, as we have seen, are real activities, otherwise they would not exist even as ideals, continually modifying, as they do, scientific procedure in so many ways. In like manner it is not difficult to show that the ideals of ethics or aesthetics, in so far as they possess any effectiveness, are activities also. Any conceivable good, because of the fact that it is so conceived, is a more or less important factor in the behavior of the individual who conceives it. In so far as it is a factor its presence determines his conduct, alters the process of his reaction, is effective—in other words constitutes an activity.

The same thing is true of aesthetic ideals. The painter strives for an ideal beauty of color composition, the musician for an ideal perfection of melody, harmony, and counterpoint. The specific aesthetic ideal in either case is the dominant factor which governs the whole attitude—modifies the entire reaction of the artist who possesses it. In scholastic phraseology it is the "final," or "formal" cause—which in this case is none the less true because it smacks of Aristotle. Called by any name you please, however, such ideals are activities.

Religious ideals also are, if anything, even more "active" activities, since they more deeply modify

the course of the average individual's behavior. All of which may throw some light on the apparently paradoxical fact that Apollo or Nicholas Nickleby are in some ways more real characters—occupy a higher place in the scale of activities—than many a person whose lumbering footsteps press down the solid earth.

Not only events in general then—anything that happens—but anything that makes a difference in the world of happenings, is, to that very extent to which it *does* make a difference, an activity. Values therefore, about which there has been so much recent discussion, will be conspicuously, and with rather notable clearness, activities. For "values" are those conditions in any situation which determine the reactions of living organisms to that situation. They are those elements in a "state of affairs" that control the conduct of the man or animal which that "state of affairs" confronts. The very essence of their being is to constitute the worth factor in anything to which they may pertain; the value of anything being obviously the criterion of its effectiveness. The philosopher acts unwisely here when he overlooks the pithy truths of the common man. Anybody is worth "what he is good for," says the vernacular—his value lies in what he is able to do, in the changes for which he is the reason. That which constitutes the value

of anything is its efficiency, its existential status has nothing to do with it. For a value is none the less an activity because it appears to be neither physical nor mental. On the contrary, values are among the most sharply defined instances of pure activity, since their entire being lies in their effectiveness—their *esse* is *efficere*.

So much, then, for all sorts of things. Turn wherever we will, in so far as these are effective in any way at all as conditioning the course of events, they are activities.

As yet, however, consciousness has not been referred to directly. Perhaps, at this place, it is hardly necessary. Yet that such a fact, or the series of facts for which it is the generic term, exists can scarcely be controverted seriously.[1] For, evidently, it is either an entity, a process, a relation, or some combination of these. And since, as we have attempted to show, all entities, processes, and

[1] Neither James, the Behaviorists, nor the Mechanists question the existence of awareness data as empirical facts, whatever views they may advance as to the existence of consciousness as a valid conception over and above these empirical facts. Wm. James, 'Does Consciousness Exist'? pp. 1-37, Essays in Radical Empiricism; Longmans Green & Co., London, 1912.

John B. Watson: Behavior. New York, 1914, and Psychology from the Standpoint of a Behaviorist. Lippincott & Co., 1919.

Jacques Loeb: The Mechanistic Conception of Life. University of Chicago Press, 1912.

relations are activities, it follows, of course, that consciousness must be an activity also. That awareness exists at all (and who doubts it), unquestionably makes some difference to the world in which it belongs, and to that extent at least it is an activity. That it is an activity in a much wider sense most of us believe. But in so far as it *is* at all, in so far forth it is an activity.

Well; the various kinds of activities have been sketched in a brief way, and the rough outlines of a world have been blocked out from the Activist's point of view. If all is activity, however, there must be some principle by which the various kinds or degrees of activity can be distinguished or this world would be all alike, which it obviously is not. The problem here, then, is in what does this differentiation consist? How does this "one" become "many"?

Before even an attempt to answer this problem can be hazarded however, a preliminary question must be asked—namely, in what does the measure of activity consist? How can the differences between specific activities be determined; in what do such differences consist; and can any conception be discovered by which these differences can be intelligibly described?

The problem is not easy, but we are inclined to believe that such a conception can be found;

a conception which, for want of a better term, we shall call "intensity." The use of intensity in the sense proposed here is perhaps unfortunate, as the word has already acquired so many technical meanings; as, for example, in electricity, where it is applied only to the measurement of differences in electrical level, or voltage, in contradistinction to the "amount" of electricity; in psychology, where the word is usually applicable only to the varying degrees of a particular sensation or feeling. Accepting however as authoritative Royce's definition of intensity as a method of determination wherever differences can be expressed only by means of "greater-less, and equality," this use of it appears legitimate; so that on the whole it would seem better to employ it in this somewhat special way rather than to invent some new, and possibly barbarous, equivalent. We shall use the word, therefore, but not quite in its ordinary meaning, much less in the restricted sense in which it is employed in physics and psychology. As even its ordinary connotation, however, implies a degree of power from within, an intrinsic effectiveness; and as activity is essentially self-active, since according to our definition it is the ground for all process, the term seems not unfitting.

But we propose to use it in a still broader way, as well as with a more specific significance.

For our purposes, we shall consider intensity to include certain essential elements which we shall call, respectively, *amount, range,* and *persistence.*

"Amount" signifies the intrinsic quantity of activity involved in any specic instance. "Range" means the extent to which that specific activity is efficient in regard to other activities. And "persistence" indicates the duration of a specific activity as such.

To these a fourth, and derivative, characteristic may be added which we shall call *exclusion*—the extent to which an activity, by reason of its own intrinsic efficiency, remains impervious to the influence of other activities; the extent to which any of its own efficiencies may be regarded as independently variable.[2]

To explain further—(1) Amount—the intrinsic quantity of activity—is almost self-evident, and scarcely needs additional definition here.[3] The

[1] Stated in relational terms these elements represent: (1) The relations of a being to itself or to its own essential parts—its "inner" relations; (2) its relation to whatever is not itself—"the outer world" spacially and otherwise; (3) its relations to the time series; and (4) the relations to it of whatever is not itself.

[2] Strictly speaking the "amount" of any activity is the quantity of units (however defined) of which it is composed. And "quantities", says Royce, "are objects, either physical or ideal, that fall into series by virtue of relations of the order of greater and less".

world of physical energy abounds in sufficiently obvious examples of what is meant. A living material organism, for example, represents a greater intrinsic quantity of activity than, let us say, a wooden image of the same size and weight. It possesses much more of those forms of activity known as physical and chemical energy.[4]

Thus, for example again, although our wooden image is less intrinsically active than the living organism, it might well, if pushed off a high cliff, annihilate that living organism on the ground below. In this event however the activity which had brought about this unfortunate result would not have been the intrinsic activity of the wooden image but the intrinsic activity of gravitation, plus, of course, the relational activities of its situation on the edge of the cliff, the push, etc. Its own activity would have

His definition of a series is "any row, array, rank, order of precedence, numerical or quantitative set of values." A series as defined by Huntington is "any class of distinct elements such that if an element A > (is greater than) B, and B > C, then A > C."

For a full discussion of this subject see Royce's "The Principles of Logic" in the Encyclopædia of the Philosophical Sciences, vol. I, p. 111 ff.; and E. V. Huntington's "The Continuum", p. 10; also B. Russell's "Principles of Mathematics", vol. I, p. 199.

[4] By "intrinsic" here, is meant a qualification restricting the measure of activity to that quantity of activity which, in any given object (physical or otherwise), exists by virtue of that object being what it is.

nothing to do with the result except the fact of its weight, and this, *ex hypothesi,* was no greater than that of the organism.

To take another example—not from the physical world—the ideal of goodness is more intrinsically active than such an ideal as gentleness. Because it is just what it is, it is a greater factor than gentleness in influencing human behavior. It is more dynamic. As a moral value it is larger.

(2) A second element involved is range. Range means for us here the measure of how many, and how much, other activities can be affected—how many, and how great, are the changes of which any specific activity can be the ground. For example once more, the range of the living organism is clearly much wider than the range of its wooden replica. For, first of all, it can physically transport itself about the earth, and so come into contact with a larger variety of material environment. Whereas the wooden man must stay where it is put unless moved by some extrinsic physical force. The living organism, furthermore, even when stationary is in effective touch with many activities, internal and external, with which any inorganic substance is necessarily out of all immediate relation. It can act upon, and react to, innumerable stimuli to which anything merely wooden is essentially quite oblivi-

ous. In fact the case is so plain that mere citation is sufficient.

In another sphere the goodness ideal is an equally evident instance. For such an ideal as goodness influences a thousand men, where the value of gentleness appeals to perhaps a dozen. The "range" of its effectiveness as an activity is many times as wide.

Such an ideal entity as a cone is another instance, for a cone is applicable to a multiplicity of mathematical problems, affects innumerable calculations, its sections are followed by myriad heavenly bodies; whereas such a solid as the dodecahedron is of interest only to Archimedes or the mineralogist. As a mathematical conception, a symbol, or a physical fact, a cone is an important activity—constitutes the ground for many processes, psychic and physical, while the dodecahedron is chiefly active as the principle of cleavage for sphalerite. As a standard of practical value whoever saw a dodecahedron outside of a book on geometry, or perhaps in its approximate form, the pyritohedron, among the crystals of a mineralogical museum? But even the planets in their mighty courses travel according to the sections of a cone.

(3) The characteristic of persistence, taken by itself, needs, of course, no comment. Used in this connection, however, since it necessarily involves a temporal element the term would seem to call for

some elucidation. Yet what is meant is really simple enough. What is meant is that, in taking account of the total value of any specific activity—the measure of its entire effectiveness, we must include as a factor range of duration as well as spacial range and range of numerical quantity. "How much", "in relation to how many different things", "with how little interference", and "for how long", is a certain activity efficient? These are the questions the answers to which determine its intensity. For it is obvious that an activity which persists is, other things being equal, of more importance than an activity which is transient. It is efficient at more moments. Its temporal range is greater. A living tree, for example, has more persistence than a dead tree. From the very fact that it is a living organism it can repair injuries, adapt itself to varying conditions in its environment and so remain to stand and flourish when the dead trunk has lost its withered limbs and fallen rotting to the ground.

Or again, such an ideal as that of truth has greater persistence than the conception of error, since it is in relation to a greater part of the time series than error. Broadly speaking, true judgments are more frequent than false judgments.

And this is so whether we accept the pragmatic definition of truth, the realistic definition, or agree with Emerson that "truth is the conformity of

thought with things". For it is evident that in general thought *does* conform with most things for most of the time. So that even if all ideals should turn out to be "eternal"—extra-temporal—they nevertheless vary enormously in the persistence with which they act as grounds for any specific changes. The same is true of mathematical ideals. For, although a dodecahedron may be as everlasting—as much "nowhen"—as a cone, its persistence is much less since there are long periods when its activity is practically non-existent or, to say the least, reduced to an almost negligible minimum of efficacy, whereas the cone is widely active all the time.

(4) The characteristic of exclusion is, in a sense, the inversion of range. By exclusion is meant that capacity in any activity which from its intrinsic nature offsets or overcomes the effectiveness of other activities. For example, the living organism can offset by its motion the property of inertia which characterizes completely the wooden image. It overcomes by its metabolism the processes of decay which tend to disintegrate it. It excludes, by the capacity of its integrated nervous system for reaction to a wide range of stimuli, the unhindered and overwhelming activity of any single stimulus from driving it to disaster. And it is obviously this capacity for exclusion, even more than its merely

greater physical energy, which differentiates it from its wooden effigy.

By exclusion, however, it is not meant that the adverse activity is nullified or destroyed, for activity as such is indestructible.[5] What is meant is that any such adverse activity is directed to its own advantage, or otherwise overcome in such a way as to interfere as little as possible with its own intrinsic activity.

For example the ideal of goodness normally offsets any adverse conceptions of evil with which it is by nature in conflict, unless these latter conceptions are given an enhanced dynamic value by extrinsic reinforcement. It would, also, usually exclude such a lesser and more qualified ideal as gentleness if that ideal, although somewhat similar, should find itself in conflict with its more powerful and comprehensive companion. "Fighting for the right", for example, although itself a "good" might altogether exclude all gentler virtues.

Or again, although different geometric figures are as a rule mutually exclusive as ideal activities, even

[5] "Exclusion" is developed here as a distinct characteristic because, although the inversion of "range", it is just for that very reason, something different. Range is the number of B's to which A "makes a difference". Exclusion is the number of B's which, owing to A's being what it is, do *not* "make a difference" to A. The relations here are not reflexive. The point is important as will appear later in the discussion of awareness.

in this case the analogy to some extent holds good. For empirically it is evident that all actual motions follow approximately curves of some sort, circles, ellipses, spirals, and the like, to the almost complete exclusion of such unusual and fantastic figures as dodecahedrons. As an efficient ground for most physical processes, therefore, conic sections possess a notable power of exclusion, as against any forms that are strangely or elaborately angular.

We have now attempted to explain, *seriatim,* the characteristics of intensity—namely, quantity, range, and persistence, as well as the characteristic of exclusion; and have tried to show how intensity, as so defined, constitutes the measure of activity. Yet it is plain that these characteristics need not be of equal importance as between similar activities belonging to any one class, since it is conceivable that any two or more specific activities might be either exactly alike or might differ as to only one, two, or three of these characteristics, or to any extent as to each of them. Thus two organisms might be absolutely twin, or they might differ only as to innate energy (quantity), physical strength, or capacity for varied reaction (range), or vital resistance (persistence); or any combination of these. In whichever of these the difference between them principally lay, nevertheless, that difference would constitute in so far forth a difference of intensity and so a measure of their relative activity.

It is evident, moreover, that the differences between the two great classes of entities and relations, consist of such wide generalizations as to be of little specific interest at this point. Where the full significance of intensity as a differentiating conception comes in especially is in delimiting the great intrinsic levels, or planes, of activity into which the world appears to be divided.

CHAPTER 3

PLANES OF ACTIVITY

THE universe of which we seem to be aware, it was said at starting, falls into three great classes—entities, relations, and processes. This division however, although important as a general fundamental proposition, is to some extent formal, for empirically we do not discover entities out of all relations with either each other or with at least one, and usually many, processes. The world as it actually appears is an entity-relation-process affair. It is also, as we have attempted to show, through and through a world of "activity". It appears to be, moreover, quite obviously a world of many different degrees of activity; and we have tried to point out in what, essentially, these differences would seem to consist; while the measure of those differences, or that by which they might best be determined, we have called "intensity", defining that term, in a somewhat special way, according to its three principal characteristics of amount, range, and persistence.

Accepting provisionally these preliminary principles, and with the conception of intensity as a differentiating instrument, let us examine our data a little more closely.

Let us begin by turning our attention to the material world—the world of physical science.

Now one of the first things that strikes us here is that the apparent order of this world is far from democratic. On the contrary it is notably hierarchic. It is everywhere cut across into pretty sharply defined planes. The scale of ascending complexity, of increasing activity, is marked by salient differences. It proceeds by jumps from electricity to gas, thence to mineral, vegetable, and animal; from electron to atom, thence to molecule, cell and neuron; from the simple reactions of the comparatively homogeneous inorganic elements to the highly organized activities of the complex living organism; from the mere sensitivity of the amoeba to the complicated selective reactions of the higher vertebrates. That these apparent differences are also real differences imbedded in "the nature of things" is indicated by the fact that Science finds itself obliged to employ additional sets of postulates whenever it wishes to pass from its conception of the entities and relational conditions which characterize any one plane to a conception of those which characterize a different plane.

In the transition, for example, from mathematics to physics the additional postulates of mass and gravity (or some other relational "influence" between physical entities) must be assumed. In passing from physics to psychology the postulate of awareness (however defined) must be superadded.

Unless, then, these differences were essentially involved in the data with which science is concerned in interpreting, the necessity for such distinguishing postulates would not have arisen.

In each new plane, also, where the entities are characterized by generally greater complexity, a fresh set of organizing relations comes into play. Cells, for instance, are not merely aggregates of atoms, but the component atoms involved must be organized in certain definite ways. Nor are atoms presumed to be mere congeries of electrons, but assemblages of electrons organized into certain specific patterns. The activity, again, of a living animal is different from the activity of an inert mass, if in no other way at least in its greater complexity and its inclusion of a greater number of organizing relations. And there is always a more or less well defined break wherever these new relations of organization appear.

When we reach beyond the domain of physical science, moreover, the great transections seem even more marked and separate. For whenever we pass from matter to electricity, from electricity to consciousness, or from consciousness to a possible plane of neutral entities such as universals, ideals, and relations, we seem to plunge at once into totally different worlds.

Yet these so different worlds are unquestionably facts of some kind no matter what their exact status may be, and we cannot be absolved from taking some account of them even by denying that they exist. For the world of matter is *not* analyzed out of existence by showing that its constituent atoms are configurations of electrons, nor the mental world by proving that its processes can be described as the selective reactions of an integrative nervous system. Matter is not just electricity, however its units may be compounded. Fresh organizing relations must be superadded. Nor is consciousness solely selective reaction, let that reaction be as discriminative as it may. Nor, for Activism at any rate, are universals and values merely mental. The worlds of matter, mind, and values may be mutually interrelated, but they are not the same. Nor can we legitimately hold that any one of them is more real on its own plane than any other one. For while, according to our contention, all these worlds are activity in one form or another; and while it might also turn out that they were all "material", or "psychic", or possessed of some other characteristic in common; yet their differences would be none the less salient.

For example: As regarded by modern physics all matter is ultimately electric in character. Its mass depends upon an electric charge, its atoms are com-

plexes of electric corpuscles. All electricity, however, is not matter. It is, on the contrary, something less rigidly conditioned and something different.

Yet in passing from the plane of electricity to the plane of matter we move into a world of activity possessing greater range. That specific form of electricity known as matter, because it is structurally more complex and involves a greater number of organizing relations, can do more different things, is efficient in more directions—possesses, generally, greater intensity. The same thing is true when we pass from so called "inorganic" matter to the plane of conscious organisms (whatever "conscious" may be held to mean). As we have shown before, the conscious organism can do more, the range and intensity of its activities is altogether greater than that of any "lifeless" complex. And this is none the less a fact because, apparently at any rate, we find "conscious" reactions associated only with certain specific material forms. This may well be a numerical correlation only. It does not necessarily imply that the conscious organism does not intrinsically belong to a world of more intense activity.

For, even if consciousness could be shown to be nothing else than behavior, *i. e.*, the specific reaction of certain complex material organisms, it is evident that such behavior takes us at once into a wider and different realm than merely material activity. It in-

volves in the first place electric phenomena of a delicate and complex form not present apart from a nervous system. It involves further, at least in man, reaction to such extra-physical things as values, moral, æsthetic, or philosophic. It may also involve awareness of its own processes—self-consciousness, however we may interpret that much discussed term. In short, it involves many kinds of relational complexes which are quite beyond the "range" of mere mass and motion. Call awareness what you will, behavior, relation, dimension, or epiphenomenon (whatever that self-contradictory word may mean), it nevertheless makes a difference, implies an additional factor, opens up a wider range of activity.

Whether we can get along comfortably in psychology without the concept of "consciousness" is a fair question. Yet, answer it as we may, we shall still continue to have sensations, feelings, and thoughts, however technically defined. Nor can any amount of definition blot out the essential difference between that which is aware, the objects of which it is aware, and the means by which it is aware of them.

Since, then, awareness not only involves process, but a process of such specific characteristics as definitely to differentiate its activities from those of other planes, we shall speak fearlessly of a plane of awareness—a psychic plane—within whose limits

psychic processes occur, and leave to the psychologists, for the moment at least, all further controversy as to its proper status. We shall assume also, with the realist and the common man, that there are objective and "material" actualities which act and interact upon a physical plane independently of any knowing process on our part, as well as extra-physical and "meta-psychic" realities—relations, ideals, values—which constitute in their turn activities upon a plane of their own.

Just then as the world can be divided, as it were, perpendicularly, into three great classes of being—entities, relations, and processes, so it can be divided, transversely, into three main planes—the physical, the psychic, and the meta-psychic.

Each of these principal planes is distinguished by characteristic organizing relations, the absence of which from the other planes constitutes a set of differentiating conditions.

Each of these planes also, as we shall attempt to show in the next chapter, possesses, in addition to its distinguishing set of organizing relations, its own fundamental structural units which differ essentially from the characteristic units of the other planes.[1]

[1] Most of the eastern philosophies have called attention, in one form or another, to this division into planes. The usual broad transection for the Indian thinkers is into the physical world (mahabhuta), mind (manas), and spirit (atman);

sometimes they are called âkâça (ether), purusha (soul), and brahman (spirit).

The Upanishads. Translated by Max Müller. Oxford: The Clarendon Press, 1879.

Sir M. M. Williams: Indian Wisdom. London: Luzac & Co., 1893.

Paul Deussen: The System of the Vedanta. Translated by Charles Johnston. Chicago: Open Court Pub. Co., 1912.

Sri Ananda Acharya: Brahmadarsnam. MacMillan, N. Y. 1917.

Buddhism is so strictly ethical that it has but little interest in cosmology. The world for it, also, is nothing but pure process and essentially unreal. Pragmatically, however, it too accepts analogous divisions. Conformations—the objective world (sankhara); sentient existence (viññana); and whatever lies beneath it all, usually expressed in a typically Buddhistic negative and illogical fashion as, at one end, ignorance (avidya), and at the other end, the goal of real attainment, "Nirvana".

The Jataka. Translated by E. B. Cowell, Cambridge University Press, 1907.

Herman Oldenberg: Buddha. Translated by William Hoey. London: Williams & Norgate, 1882.

Henry Clarke Warren: Buddhism in Translations. Harvard University Press, 1896.

How much Plato may have been influenced by eastern thought it is difficult to determine. Yet it now appears to be pretty well established that the intercourse between Greece and the Orient was much closer than was formerly supposed, so that it seems unlikely that Athenian scholars should have been totally ignorant of Indian philosophy.

CHAPTER 4

UNITS OF ACTIVITY

In the last chapter we distinguished, briefly, the principal planes into which the three main groups of activities which seem to constitute our universe appear naturally to fall.

Hereafter we shall refer to these planes as respectively "lower" and "higher," proceeding "upwards" from the physical, towards the meta-psychic plane.

This figure of speech, however, is not merely arbitrary; but since it appears to reverse the convention which usually designates simpler and more fundamental phenomena as "lower," and more complex derivative phenomena as "higher," some explanation is perhaps necessary here in order to avoid confusion.

Such a sub-plane as that of matter, for example, is considered "lower" than the sub-plane of electricity because, although the fundamental unit entities (atoms) of the material world are complexes of the unit entities (electrons) of the world of electricity, and so "higher" in the scale of progressive complexity, the activity of the electric world in general is far greater in intensity, as to amount, range, and persistence—than the activity of the world of matter.

When the still "higher" planes are reached, as we shall observe, this condition is even more apparent; the activities of the psychic and meta-psychic planes, although more basic structurally, being of greater intensity in almost every way than the activities of the plane "below."

Now each of the three principal planes—the physical, psychic, and meta-psychic—proceeding in this way from lower to higher—we found to be characterized by a distinct order of data, as well as by a different set of organizing relations.

We found, also, that these transections were not merely schematic but appeared to represent a real distinction between the phenomena of each plane, so that it was necessary, in the progressive consideration of the content of any two planes, for science to make use of certain new postulates without which it could not pass from one to the other.

The same general conditions likewise seemed true in regard to the minor divisions, or sub-planes, into which the main planes could be separated, although here the limits were less sharply defined. In the physical plane, however, there appeared to exist fairly evident lines of demarcation between the classes of phenomena known as electrical, chemical, and organic, both in regard to their respective structural units—electrons, atoms, and cells, and in regard to the various sets of organizing relations

characteristic of each class. We did, not, however, attempt to indicate just how intensity, as we have defined it, was to be applied here as an adequate standard, or measure, of differentiation between these groups or planes. This question, however, was purposely reserved, because it involves a further consideration of some importance, namely the problem of the units of activity.

Now this problem obviously opens up at once the whole question as to how far a quantitative representation of the contents of our universe will prove adequate—how deep the quantitative analysis will cut. Yet here we must again confess ourselves to be committed to the empirical method, and here once more we shall ask what is that "state of affairs" which we actually seem to find.

In the first place, throughout the physical world, some sort of atomism is the universal formula. And, without doubt, empirical findings have brilliantly substantiated the atomistic hypothesis. The living organism is composed of cells, the cell of molecules, the molecule of atoms, and the atom of electrons. Cells and molecules are visible through the microscope or ultra-microscope; the result of an impact flash from a single atom—the α particle in radium emanations—can be seen in the spinthariscope; and the electrons, although as yet invisible, can be indirectly measured and counted.

But although the contents of each plane can be ultimately reduced to the units which compose it, any further reduction of the units of any one plane can only be obtained by resolving them into the basic units of the plane next above. A molecule can only be resolved into its constituent chemical atoms, or an atom into its constituent electrons. So we jump here, at a bound, from the plane of molecules and molecular motion to the plane of atoms and chemical activity; and then, at another leap, from the plane of matter altogether into the plane of electrons and electrical activity.

Yet it is only under certain specific and limiting conditions that the units of the higher plane become combined into units of the plane below. The world is full of electrons which are not grouped into atoms (as an electrical charge); and of atoms not combined into living protoplasm; or probably even (as in the photosphere of the sun) into molecules of any kind.

The significant fact should be noted here, however, that it is only by this combination of higher plane units under the specific limiting conditions of the plane below that the units of the higher plane can manifest the particular sort of activities which essentially characterizes that lower plane. Thus electrons, or mere groups of electrons, do not manifest chemical activity. In order to do so they must

first be combined in a certain specific manner into atoms. To form living cells the atoms must be first organized into that specific colloidal solution known as protoplasm. And particularly must it be observed that the unitary complexes which can be formed with cells are quite impossible to form out of atoms not already in cellular formation, or the unitary complexes of atoms equally impossible to form out of electrons not first in atomic configuration.

This brings us to a further point, which is that the several elements of intensity may to some extent vary independently, and particularly the element of range.

For it is clear that any two specific activities, such as physical or ideal objects, may differ from each other in amount,—*i. e.*, a greater or lesser number of component units—without differing in duration, since they may both persist for the same length of time. Or two such activities may differ in range without differing in either amount or persistence. Thus, for example, as physical objects a man and a wild animal might be equal in amount, might contain the same number of physical units—atoms, or electrons, but the range of the man, as an activity, would be much greater; there would be many more physical things to which he would "make a difference". Usually, also, his persistence would be greater as

well. For men generally live longer than most wild animals.

It follows therefore that, although the total activity on any plane below is less, the range of any specific activity on the lower plane may be nevertheless greater. And it further results, paradoxically enough it would seem, that the unitary complexes (*i. e.,* complexes which act on their own plane as units) of the lower plane may, and often do, manifest a more intense activity than is possible for most at any rate of the unitary complexes upon the plane above. Certain chemical compounds, hydrogen gas for example, have a greater range of activity in every way—even electrically—than the same number of electrons grouped in other ways upon the plane of electricity alone. An organism composed of living cells possesses more intensity—a far greater range of possible reaction—than any inorganic chemical compound. A Leyden jar has more intensity than a free charge composed of an equivalent amount of electrons. An animal has more intensity than a wooden replica of it composed of an equivalent amount of atoms.

On the physical plane, then, both the fact of atomic structure and the fact that the units of the higher planes combine into units of the planes below are evident. While it is also to be observed that the unitary complexes upon the lower planes are

capable of a more complex organization and possess greater intensity than is usually possible for any similar unitary complex upon the plane above.

When we come to the other planes, however, similar conditions are not generally held to obtain. Psychic atomism is in bad repute and maintained by few philosophers. We propose, nevertheless, to try this hypothesis even in these unusual regions, and to examine seriously how far it will work.

Let us assume then that just as, in the physical world, objects are ultimately composed of atoms which in their turn are composed of electrons, so electrons in their turn could ultimately be analyzed into complexes of still more fundamental units.[1]

[1] The atom is now considered by science as an established fact; and the objective status of the electron is nearly as good.

Sir William Ramsay: Elements and Electrons. Harpers, New York, 1912.

Sir Oliver Lodge: Electrons. George Bell & Sons, London, 1917.

Frederick Soddy: The Interpretation of Radium. Putnam's, New York, 1909.

L. Silberstein: The Theory of Relativity. Macmillan & Co., London, 1914.

There is moreover already some evidence which indicates that the electron may not be so simple as at first supposed. Should it prove to be capable of contraction or change of shape; or, as some recent theories hold, to be a concentric field of force diminishing from center to circumference, it would be complex, at least to the extent of these variations.

Let us assume also that these hypothetical units of which the electron is made up are units of a higher plane, whose characteristic activity stands in a relation to electricity analogous to that in which electricity stands to matter. And finally, since we are already familiar with one form at any rate of this higher activity in the psychic processes, let us call these units "psychons".[2]

We need not raise the question at this point as to what awareness "really is". We shall merely content ourselves with baldly stating our doctrine of psychic atomism.[3]

Awareness, at any rate for us, is an activity—a "that by reason of which change occurs", in this case, of course, change of awareness at the least, and, like any of the other activities which we have examined so far, composed of units—the psychons—whose combinations and unitary complexes make up

[2] The term "psychone" was proposed by Forel for the psychic aspect of a hypothetical unit of the nerve process, but as far as I am aware it has never come into general use.

August Forel: Hypnotism. Putnam's New York, 1907.

[3] The student of the history of philosophy will undoubtedly be reminded here of Herbart's atomistic theories. The hypothesis proposed, however, differs in many respects from the Herbartian point of view.

Herbart's monads (Reale) are essentially different from each other. They are simples, independently existent, their only positive attribute being self-preservation (Selbsterhaltung). They are also supposed to be impenetrable, al-

the various characteristic activities of the psychic plane, as well as become combined into that special sort of unitary complex which forms the units of the plane next below. And since the next lower plane, in this case, is the plane of electricity the unit which is directly composed of psychons is the electron. The collective activity of psychons, also, which we shall call "psychokinesis" differs, with its various combinations upon its own plane, in intensity; these various combinations of psychons exhibiting as groups respective degrees of amount, range, or persistence; in general, amount and range depending upon the number of psychons in a group, and persistence upon the character of the organizing relations involved.

though they exist in an "intelligible" space in which any number of them may occupy the same point at the same time. Out of these monads Herbart builds up his world of experience including both physical and psychic phenomena. His monads, therefore, are strictly neither psychic nor physical; although, as spacially conditioned, they resemble somewhat the "force-points" of modern physical theories.

Unlike the Herbartian monads, however, which are independently different entities, the psychons are considered to be all alike since they are awareness units, nor are they essentially conditioned spacially. They are awareness units, and nothing else.

CHAPTER 5

Unitary Complexes

A unitary complex is a complex of units which behaves as itself a unit. It is a complex of such a kind that it behaves as a whole, in a way in which no mere congeries of units could behave. The measure of its activity, therefore, is different and larger than the measure of the activity of any complex which does not act in this unitary fashion, *i. e.*, other things being equal its intensity is always greater. The intensity of such a complex moreover depends not only upon the amount of unit activities involved, but also, and principally, upon the degree of complexity (range) with which these units are organized. It obviously depends as well upon the degree of closeness (exclusion) with which the component parts are knit together. It depends, that is, directly upon the character and extent of the organizing relations involved.[1]

It is obvious that the intensity of an organism is greater than the intensity of any mere numerically

[1] The further question naturally suggests itself here—just what organizing relations must be brought into play, in the case of any particular complex, in order that that complex should be a unitary complex—*i. e.*, behave as an individual? This question in our present state of knowledge, can only be answered empirically. We have discovered many of the relations involved in molecular structure, as, for example, the

equal congeries of cells, that a cell has more intensity than an unorganized group of atoms, or an atom more than a group of free electrons. Yet it will be observed that there exist many varieties of organization of the units of each plane respectively, many complexes of less unification and intensity than the special organization which is essential in order to form a basic unit of the next plane below. There are, for example, unitary complexes of electrons, such as those which form unit charges, which do not form atoms; complexes of atoms, as the α radium emanations, which do not form molecules; and, of course, very many more of such complexes which are not grouped into living cells. These various complexes differ widely in extent of organization and intensity, and it is only certain specific complexes of great closeness of organization and high relative intensity upon any plane that are carried over as units of the next plane below.

As we mount from plane to plane, also, the units of the higher, more fundamental, planes are found to be more and more alike. Cells are of many different sorts, atoms of eighty or so varieties according to

two-to-one relation and the relation of propinquity of H and O in a molecule of water. We have not yet discovered the number and configuration of electrons in most of the atoms. All that we can say, therefore, as a general proposition, is that there must be certain definite organizing relations as essential elements in every unitary complex, whether we have discovered them or not.

the number of chemical elements, but electrons are supposed to be at most of two kinds, negative and positive, and quite probably of only one kind—the negative electron. The specific character of any unitary complex, therefore, as well as its existence as such a complex, depends directly upon the specific character of its component units derived from the next plane, and so on, ultimately, through all the other higher planes in succession. A cell, for instance, is a particular grouping of molecules, those molecules a particular combination of chemical atoms, and the different component atoms special configurations of certain numbers of electrons.

So the whole of the physical world is characterized by an ascending degree of organization by means of unitary complexes, those complexes occurring progressively in descending from the higher planes to the planes below.

Paradoxically enough, therefore, in a process curiously reminiscent of the ancient doctrine of the "descent of the spirit into matter", it would seem that it is only by organization upon the lower planes—greater specialization, or limitation—that the activities of the higher planes can achieve their enhanced degree of range and intensity.

It follows conversely that the process of disintegration, whenever it occurs, is always a breaking down of a unitary complex into the component units of the plane above. An organism, when it ceases to

be an organism, becomes a mere quantity of molecules and atoms; a molecule breaks up into atoms; while at least a partial disintegration of the atom itself, as we know, is observable in the case of radium, two of whose three disintegration products —the β and γ rays—are considered to be electric in character, the β rays presumably streams of electrons themselves.

The fundamental conditions, therefore, for the formation of a unitary complex are found always upon the planes above the one upon which the complex itself exists. A complex of atoms is what it is because of the particular natures of the atoms which compose it; and these particular atomic natures are what they are because of the nature of electricity which permits its units—the electrons—to be held together in certain stable configurations, these stable configurations being dependent in their turn upon the organizing relations involved. What electricity *does* make the atoms what they *are*. In other words the structure of a unitary complex upon any one plane depends directly upon the *functioning* of the units of the plane above—this functioning, in its turn, depending upon the essential activity of the units of the next higher plane, and so on; the organization on all the planes depending, ultimately, upon specific activities—namely, relations—of the meta-psychic plane; the activity of any plane thus

standing in, as it were, a "force" relation to the activity of the plane below.

Now we have spoken, thus far, only of the unitary complexes of the physical world so called. The same general principles, nevertheless, hold good for the higher planes. Whatever our view as to the actual nature of consciousness, there can be no doubt that psychic complexes exist, and that as a matter of fact these complexes are more or less unified—function as unitary activities. The normal psychic processes of any living organism are integrative. The organism not only functions as a unit, but appears to itself so to function. And the more complex the organic structure, in this case at any rate, the more unified is the function, the greater the coördination, the wider the range of stimuli to which the organism can respond as a unit. Moreover, just as a material complex depends directly upon the nature of electricity of whose units it is ultimately composed, so, according to our hypothesis, an electrical complex depends directly upon the nature of psychokinesis. In other words, it is upon the capacity of the psychons to be formed into certain unitary complexes that depends the existence of unitary complexes upon the planes below.[2]

[2] A fuller discussion of the nature of psychokinesis and its units will be found in Chapters 7 and 9.

At this point it seemed less confusing to state merely the bare hypothesis of psychons and their complexes.

A psychic complex therefore, no matter where found, nor how correlated or identified with the characteristic complexes of lower planes, is none the less fundamentally and intrinsically a complex of psychons and dependent, ultimately, not only upon the organizing relations necessarily involved, but also upon the fact that the entities so related are psychons—awareness units—and not something else.

Just as, also, there are many material complexes which are not organisms, and complexes of electrons which are not atoms, so there may be complexes of psychons which are not electrons, but psychokinetic complexes only. For although, presumably, all matter is electricity and all electricity psychokinesis, all psychokinesis is not necessarily in the form of either electricity or matter. According to this point of view, therefore, there is no reason in the nature of things why awareness, or unitary complexes of it—psychic centers—could not exist apart from the activities of any lower plane.

It is evident, however, that, although such psychokinetic centers might exist independently upon their own plane, they could not exist independently of the activities of the meta-psychic plane or planes, above. For even psychokinesis is only one form of activity, of which *ex hypothesi* there exist still wider and more inclusive manifesta-

tions. And these still wider forms of activity are, of course, the entities and relations of the higher planes—ideal entities, relations as such, and complexes whose logical nature depends upon neither physical nor psychic activities.

Here again, we find activities without which the activities and complexes of the lower planes could not exist at all. For in the first place it is evident that no complex of any kind upon any plane could exist without relations—since what "complex" means is an integration of relations. Nor could the various degrees of integration occur as we actually find them if the numerical series were not intrinsically just what they are, since it is upon the number of entities and organizing relations involved that the extent of complexity depends; nor could any processes at all occur were it not for the time series. And this is equally true whether these higher plane activities are Bergsonian fluidities, independent realities, or merely Kantian forms of thinking. Under any of these definitions they are activities, and, as such, fundamentally and logically prerequisite to the less inclusive activities of the planes below. Here again, also, are unitary complexes existing independently on their own plane, such as relational complexes and complexes of ideal entities. Mathematics, for instance, is full of them—to go no further.

Every lower plane complex, then, is not only a complex of the units of its own plane, but a complex of complexes of the planes above *seriatim*. For example, an organism is a unitary complex of molecules, a complex of atomic complexes, of electronic complexes, and of psychokinetic complexes. But it is always a unitary complex of higher plane activities as well as a unitary complex of the immediate unit activities of its own plane. In short it is a unitary complex of many kinds and many degrees of activity. Furthermore, since the growth of structure is, as a process, usually reversible, when a unitary complex is broken down it disintegrates, successively, into the unitary complexes of the higher planes in reverse order. Thus an organism upon dissolution breaks up into molecules and atoms. The atom upon dissolution into electrons, the electron (upon our hypothesis) into psychons, and the psychon (ideally at any rate) into the entities—activity points, or what not—of the meta-psychic world.

It follows, therefore, that a complex upon any one plane does not upon dissolution necessarily cease to remain a complex upon the plane above. A "dead" organism is still, for a time at least, a unitary complex of atoms. It may conceivably exist still longer as a complex of electrons, or a psychokinetic complex.

Such a unitary complex as a physical organism, can be considered variously as a complex of cells, molecules, and atoms; an electro-magnetic complex; a psychokinetic complex; or a complex of force points in certain relations—all of which views are equally correct. But the point here is—from whichever angle of vision it is looked at, upon whichever plane the observer takes his stand—such a complex is always a unitary complex. An organism merely as a cellular complex constitutes an interrelated whole capable of unitary functions different and of wider scope—greater in almost every way—that the mere sum of its parts; it can behave in a different way, as an individual, from the way in which it could behave as a mere collection of its component cells, were there not other than additive relations involved. It is, also, an atomic complex which functions as a unitary mass independent in many ways of its character as a "living" organism; as well as an electric complex with characteristic currents and electro-magnetic fields of its own. It is, too, a psychokinetic unitary complex reacting to its environment as a psychic individual. And it is, finally, a meta-psychic complex—a complex of relations without whose existence as facts the possibility of complicated organization could not exist at all.

It is to be observed, further, that the intensity and unification of function increases directly with the increased complexity of organization—with complexity of structure. Thus an organism reacts as a unit in more ways than an electron. Unification of function varies inversely with simplicity of structure. Certain social conditions illustrate this most clearly. An unorganized body of men is incapable of acting together—of unitary function. Organize them into a well drilled regiment and they will act "as one man"—function as a unit. Their organization has become more complex, but their collective function more unified. Other things being equal, the higher the civilization—the more complex the organization of any nation or social group—the more completely can it act as a unit, the greater is its effectiveness. And the interesting fact to be noted here is that the unit itself in any such organized complex achieves, as a unit, greater intensity than it could obtain outside of the organization. Whether it be electron or man, the range of its activity is heightened. For although there are certain things that it *cannot* do, there are more things which it *can* do than if it were unconditioned in this way.

In everyday phraseology, it gains power from its organized association, as we see from the common-

place but pithy sayings: "When two or three are gathered together," or "In union there is strength."

Entities on any one plane, therefore, are always unitary complexes of units of the plane or sub-plane next above. And this brings us at once to the problem of the relations of the activities of the different planes to each other.

CHAPTER 6

INTERRELATION OF THE DIFFERENT PLANES

We have said that the activity of any plane stands in an efficient relation to the activity of the plane next below. The phrase is perhaps ambiguous, yet the meaning can scarcely be mistaken. For while the function of a unitary complex on any plane depends directly upon the structure of that complex—the specific coördination and nature of the units of its own plane—the structure of the component units depends directly upon the efficiency of the units of the plane next above. The behavior of a material complex, for example, depends upon its atomic structure, but the structure of the atom depends upon the behavior of the electron. It is what electrons do—namely, get themselves, somehow, grouped into certain relations as to quantity and position—that determines the specific natures of the atoms which they compose. Just what the numbers and patterns of the electrons are in most cases we do not yet know, although there are some interesting theories upon the subject. That, in the atoms of many chemical elements, their numbers are in the thousands and their configurations very complicated seems probable.[1]

[1] See R. K. Duncan, The New Knowledge, New York, 1908, Part 5, chap. 2, for a clear popular discussion of this subject, including an exposition of Sir J. J. Thomson's 'concentric ring theory.'

The point here is obvious, yet its full significance would seem to have been more or less overlooked. And indeed the whole question has been so befuddled, that one is reminded of the old riddle of the chicken and the egg where, although as chicken or egg, there is an infinite regressus of alternating primacy, the problem is solved as soon as we become aware that both egg and chicken have been evolved from more primitive forms whose methods of propagation were not by fertilization and gestation but by fissure.

Structure then, is always, to a great extent, ultimately process, but the process which it ultimately is is always a process taking place within the characteristic activity of the plane next above the plane upon which the structure itself exists. Organic structure depends chiefly upon chemical process; chemical structure upon electric process. The structural achievement—the organizing process—always takes place from the higher plane. This fact is important because it points the way towards an understanding of the manner in which the activities of the various planes are interrelated.

The matter is, perhaps, clear enough upon the physical planes where the general interrelation of organic structure and chemical process, or of atomic structure and electric process, although many details are obdurate as yet, is at any rate in prin-

ciple pretty well understood. For example, many, if not all, of the chemical elements of protoplasm as well as some of the quantitative relations involved are now known. The general principle also, if not the specific facts, of the numerical relations between electrons and some of the chemical atoms is known likewise. The relation, however, of electricity to psychokinesis—the activity of psychons—needs to be examined by the hypothesis which has taken this latter activity for granted.

Now up to the present our examples have been drawn largely from the world of matter and energy as understood by physical science. And we have made our inferences from that world principally because it is, in a certain sense, the one with which we are most familiar—the one whose phenomena and laws have been most thoroughly reduced to some sort of comprehensible order. But in dealing with psychokinesis we step at once into a field of different and wider activity. We are no longer dealing only with the conditions of merely physical energy—with masses, motions, and directions. We are dealing, on the contrary, with a plane whose phenomena, although in many relations to the physical planes, must be described in different terms, and measured by other than merely physical standards. It will be also with not a little difficulty that we shall be able to guard

against the unwarranted application of physical description to this more unfamiliar region. It will be hard not to speak of psychokinesis after the analogy of physical energy. Yet psychokinesis is not energy in the sense in which that term is employed by physical science; since, *ex hypothesi*, although energy is a specific form of psychokinesis, psychokinesis is not energy, but "that by reason of which" energy changes exist, which is obviously a different thing altogether.

As an activity, of course, its measure is intensity. There may be more or less of it, and it can vary, specifically, in range, exclusion, and persistence. But the "more or less" is not a physical more or less, the range not only a material extension, the exclusion not confined to physical exclusion, nor the persistence a duration of physical entities.

For although the amount, the "more or less" of psychokinesis evidently implies a greater or less quantity of psychons; yet, unless those psychons are organized into the special groupings known as electrons, their merely numerical variations need have no relation to physical energy. Nor, indeed, need their numerical variations have any relation to spacial position, since they may well be quantitatively compenetrative, and therefore not numerically dependent upon spacial extension in any way whatsoever.

The range of psychokinesis again, in any special instance, may be a range applicable to other psychokinetic phenomena only, or even to meta-psychic beings, such as ideals or universals. It is not by any means limited to physical entities or processes. Thus a love for pure mathematics may be greater or less—vary quantitatively—or it may consist in an affection for a wider or narrower group of ideal facts and processes—vary, that is, in range—where neither the quantitative variation nor the multiplicity of facts involved depends directly upon the facts of the physical world, no matter how, otherwise, they may be in relation to them.

Again, a psychic process may exclude other psychic processes; and this, of course, is true no matter what the correlation between psychic and nervous processes may really be. The martyr who, oblivious of his pain, chants hymns of joy while burning at the stake is not only a manifest example, but the fact that his attentive content is, in this instance, a religious ideal makes the case even stronger.

And finally, like all processes, psychokinetic processes vary in persistence. Attention is perhaps the most notable example, for here, together with exclusion, persistence is the principal measure of its intensity.

According to our hypothesis, then, psychokinesis is an activity whose intensity may vary independ-

ently of the activities of the lower planes. Change of awareness does not necessarily imply change of physical energy, although, as we ordinarily know them, the activities of the different planes are usually found closely interrelated. Free electricity is not usually found divorced from matter, nor psychic processes apart from physical organisms.

Our general problem therefore is, in what relations does the activity of the plane above stand to the activity of the plane below, and vice versa? More specifically, in what relations does the higher plane activity stand to those particular complexes of its own units which form, as unitary complexes, the basal units of the adjacent lower planes? How, for example, does electricity "affect" an atom or an atomic complex? How does psychokinesis "affect" an electron or a complex of electrons?

Now, as this brief essay does not pretend to be an epitome of modern physics, it cannot even adequately indicate the scope of the interrelations of matter and electricity. In general, however, it may be said that the relations of electricity to matter are interatomic. An atom is affected by an electric charge or an electromagnetic field, through a change in either the quantity, configuration, or the rate of revolution or vibration, of its constituent electrons. In the same way psychokinesis may be held to affect electrons (and, of course, collectively, electricity in

general) not as electrons, but as unitary complexes of psychons. And this immediately raises the question, how do psychons affect each other?

Now to ask how anything "affects" anything else is simply to ask for a description of the possible relations between the things in question, involving the mutual interrelation of these relations themselves. What, then, are the possible relations between psychons—between units of awareness?

Before discussing this question, however, it may perhaps be well to call attention, here for a moment, to the various types of relations, to some of which types any particular relations that may obtain between the psychons must belong.

"In brief", (the quotation is from Royce), "a relation is a character that an object possesses as a member of a collection." A relation may be dyadic —between two objects only; triadic—between three objects; or polyadic—between any number of objects.

Thus "father of" is a dyadic relation between two objects, father and son. "Indebtedness"—where A owes B for a certain sum, C,—is a triadic relation involving three objects, A, B, and C—debtor, creditor, and debt. If the debt, in this case, were in consideration for some further and more complicated transaction involving a number of additional relations, as for example, the value of real property,

rents and taxes unpaid, and the like, the "indebtedness" would be polyadic—it would relate to a number of different objects or terms.

Relations further are either symmetrical or asymmetrical. Symmetrical relations are those relations which are identical with their own inverse, such as equality or difference, since one object cannot be equal to, or different from another object unless that other object is also equal to, or different from it. Asymmetrical relations, on the other hand, are relations where this mutual condition does not obtain. A good example is the relation of precedence in the scale of greater and less between the series of cardinal numbers, where two is greater than one, three than two, and so on, but where the inverse is not true.

Relations also may be transitive or intransitive. If there is a relation between A and B, and the same relation between B and C, of such a kind that, wherever one finds A's, B's, and C's, this relation is always true, whatever the individual objects (A, B, and C) may be, then that relation is known as transitive. The greater or less relation between the members of any quantitative series, as the cardinal numbers or the generations of men or animals, are instances in point. A transitive relation may also be defined as such a relation (R), that if A R B

and B R C, then it is always implied that A R C—*i. e.*, that B R C can be eliminated.

Thus, for example, the relations between the cardinal numbers is asymmetrical because two is greater than one, three greater than two, and the like, but never the opposite. It is also transitive because "greater than" holds in the same way all along the line, between one and two, two and three, or between any two numbers in the series.

The relation "ancestor of" is also an instance. For if A is ancestor of B, and B ancestor of C, then A is ancestor of C.

Where the relations between a series of objects are transitive, therefore, they hold good as between any two objects of the series, and all intermediate objects may be eliminated. If, on the contrary, the relation between A and B, and B and C, is of such a kind that it holds good only when A, B, and C are certain specific objects, that relation is intransitive. The relation "father of" is an example. It clearly holds good only when A, B, and C are male animals of successive generations in the same family. Nor can B here be eliminated; for if A is father of B and B of C, it is not true that A is father of C.[2]

[2] The short exposition given above is epitomized from Royce's classic discussion in "The Principles of Logic", p. 96 ff. Royce there makes a further distinction between non-symmetrical and asymmetrical relations—asymmetrical being defined as totally non-symmetrical. This further distinction however is not necessarily followed, and has been omitted here.

There is, finally, still another distinction between relations which it is important for us to note here, for it obtains wherever there are several relations between any two or more objects (or terms). Thus, in a series of numbers, or other objects, the relation of "separate from" is logically prior to a relation of "greater or less", or precedence, between the members of the series. Since unless objects were distinct from each in some way, one of them could not be greater or less than, or precede, any other object.

Or, again, if a relation of greater and less did not obtain between certain objects, the relation of "inclusion" (whole-part) could evidently not obtain between them either, since in order that one object should include another object the including object must, in some way, be greater than the object included.

Now as regards the classification of relations most philosophers are in substantial agreement. As regards their nature, however, there is a very material difference of opinion. In general the theories about them are three.

Some philosophers hold that a relation always affects or modifies the objects which it relates, or that the fact of the relation being there makes the terms modify each other; so that if A is related to B, the existence between them of that relation makes a difference to both A and B in such a way that

neither A nor B are the same as they would be if the relation between them were not present. Others maintain that there is an underlying reality which contains objects and relations in such a way as to condition both of them; while still others hold that in some cases a relation may modify the objects which it relates, but that in other cases these objects may be independent. There is also a fourth and more extreme view which holds that objects which are related are always independent; are never modified by any relation which may obtain between them.

The problems involved in the various theories of relations are difficult, and it would carry us too far afield to enter the philosophical arena concerning them. Yet as some position must be taken in this matter for our purposes here, it would seem wiser to adopt, as on the whole most satisfactory, the view that objects are neither exclusively dependent nor independent of the relations which obtain between them, but that their dependence or independence is determined by the conditions involved in any particular case.[8]

We shall hold, therefore, that while any two objects might be related in many different ways with-

[8] The classic idealistic contention that this problem logically requires, for its solution, the postulate of an all-containing "Absolute", need not be considered here, since in regard to such questions a realistic position was assumed at the outset. (See Chap. I.)

out the relations obtaining between them altering the status of the objects themselves, there are, nevertheless, specific instances where the presence of certain relations may essentially alter the conditions which pertain to either one or both of the objects involved in the situation.

For example, various relations of distance, or temporal precedence, might well obtain between two physical objects without these objects being modified in any way. On the other hand a particular relation between time and distance might be directly responsible for a collision which would annihilate one of the objects, as such an object, altogether.

In the case of awareness, especially also, it is difficult to see how any object can be aware of any other object which essentially involves a complex of describable entities and relations, without being aware of the relations involved as well as of the entities, nor how the relations perceived in this case cannot but be taken to constitute a determining factor in the character of the awareness of the perceiving object.

Having now discussed briefly the nature and classification of relations in general, let us return to the hypothesis which we have been developing, and, taking a simple case—that of two psychons A and B in isolation—let us examine the nature of the relations there involved.

In the first place, there is between the psychons a relation of separateness. Numerically there are two psychons and not only one. This separateness, however, need not imply spacial distinction. It means, merely, that the two psychons stand reciprocally towards each other in a relation of "otherness"—otherness being a symmetrical relation.

Secondly, there is a relation of likeness. As awareness units the two psychons are precisely alike. This also is a symmetrical relation.

And, thirdly, there is a relation (whatever it may be) by reason of which B is included as awareness content in A. This third relation, while it is apparently symmetrical here, since there are only two psychons involved in the situation, is really asymmetrical, for, were there more than two psychons, A might be aware of B, B of C, and so on, without B being aware of A or C, nor C of B or A.

But the situation which we are examining contains not only these three relations but also two entities, namely the two psychons. Now, by definition, a psychon is a minimum awareness. A psychon is also by definition the minimum entity which exists. It would appear to follow, therefore, that the only entity of which a single psychon could be aware would be a psychon. For were a single psychon's awareness content any greater entity, or

number of entities, the awareness involved would no longer be a least possible awareness. While, on the other hand, a psychon's content could be no less an entity than a psychon, since no less an entity exists.[4] We shall assume, therefore, that, in this case, the only content—the only "something" of which either psychon is aware—is a minimum "something other", namely the other psychon.[5]

Whether or not that assumption is well founded does not materially alter subsequent considerations. For whether the awareness content of the psychon is that psychon itself, another psychon as other, whether the differentiation does not exist, or whether the content is some fundamental relation or relational complex essentially involved in the situa-

[4] The possibility exists, to be sure, that the awareness content of a single psychon might be that psychon itself. If this were true, however, it would land us at once in the ineffectual world of the solipsist, the individuals in which world—namely the psychons—could never escape from their own self-awareness. Logically there would appear to be no valid argument against such a view. Empirically, however, we do not seem to find any such sterile condition in our experience. Moreover the realistic position which was assumed at the start (Chap. I) precludes, for us at any rate, the necessity of considering solipsism any further.

[5] This assumption involves the logically prior assumption that psychon A may be aware of psychon B without being

tion, does not alter the fact that, whatever the ultimate nature of the entity, content, or process, the combination of these elements constitute in this case a *least possible awareness.* And that the psychon should be specifically and uniformly an ultimate minimum awareness, whatever its elements, is all that is essentially requisite for our hypothetic psychokinetic unit.

In this hypothetical case then, to have any psychokinesis at all there would have to be at least two psychons—which perhaps is only another way of saying that the minimum existence for an intelligible world is at least two terms and the relation between them.

In the only world which we actually know, however, there are innumerable terms in all sorts

also aware of any of the three relational elements included in the situation. It also involves the assumption that A can be aware of B without being also aware of itself as one of the terms between which an "otherness" relation obtains. The problems avoided by these assumptions are by no means free from pitfalls for the unwary. Theoretically, however, if not empirically as well, it seems entirely possible for an awareness content to consist of nothing more than a bare "that" of some kind, as, for example, a simple sensation, without any self awareness or any awareness of "otherness". Moreover, that it is possible to be aware of an object like oneself without any awareness of the "likeness", or to be aware without any awareness of the "awareness relation", is a familiar fact of experience.

of relations.[6] And since the pyschon is a unit—a minimum awareness—in order that there should be more than this minimum in any particular instance there must be more psychons. Yet it is evident that a merely larger number of psychons, taken with only the simple relations obtaining between any two of them, would not get us very far in the development of such a complex world as we actually find in our experience. For what we actually find is not a mere string of psychons (or, for that matter, any other sorts of units), but, rather, an infinite variety of more or less highly organized complexes of them.

And this at once raises the question as to how this organization comes about. Now that organization is a fact in the world as we seem to know it is indubitable. That any organization, also, necessarily involves the presence of those relations without which it could not exist seems equally clear. It would appear, therefore, that organization takes

[6] We are faced here with a phase of the insidious problem of an infinite regressus. The difficulty may be met for us, however, in several ways. The actual number of psychons may be considered to be infinite. The relations between them essential to awareness may be transitive so as to make a closed circle—A to B, B to A, and so, finally, back to A. Or awareness may, under certain conditions at any rate, be taken as reflexive so that A is aware of itself. Any, or possibly all, of these conditions might obtain.

place either by reason of the inherent activity—the organizing capacity—of the organized entities themselves, or by reason of some other activity, or activities.

Nevertheless as, for the Activist, relations also are activities of a higher plane, it seems simplest to consider that these relations themselves are the efficient agents by means of whose characteristic activities the organizing processes occur. Granting it to be a fact, then, that there are such things as "organizing relations" by means of whose active presence the world of psychons is not a mere congeries of "connexities" but a world of progressively elaborated unitary complexes, it is important here to examine somewhat more in detail the relations involved between the psychons forming these complexes, as well as to describe the interrelations of these complexes as unitary activities.

We have already seen what are the relations between any two psychons, considered by themselves, and of what the awareness of each individual psychon consists—its amount and range.

Let us now imagine a unitary complex of ten psychons. Within this complex the individual psychons would only be aware one of the other. As a complex, however, the awareness content of the ten psychons would be of a different character. For all that is necessary here in order that this should

be so is that the component psychons should be in other than merely additive relations. And that they would be in a non-additive relation is clear, since that relation by reason of which they are organized into a unitary complex and not a mere unconnected collection is essentially, as an organizing relation, non-additive. Our ten-psychon complex then, as a non-additive aggregate organized into a unitary activity, would be a more intense awareness, possess greater range, although no greater amount, than the mere sum of its component awareness units.

Its awareness content might, for example, be ten other psychons as individuals, or another complex of ten psychons, or two other unitary complexes of, let us say, seven and three psychons respectively. If, moreover, its content were the two unitary complexes, one of seven and the other of three psychons, its awareness of these two complexes as two separate entities would presumably carry with it not only an awareness of bare separateness, but an awareness of difference, due to the different intensities (amount) of the entities in question.

The awareness content here, then, would include separateness and difference, two relations of which no single psychon or mere unorganized congeries of psychons could be aware. Thus as the number of psychons and organizing relations involved in the formation of unitary complexes increases, the in-

tensities of the complexes are increased also, both in amount and range. Their possible content becomes larger. The number of other entities and relations of which they may become aware becomes greater.

Why, precisely, this comes about is a further problem. For that matter we do not know, as yet, why electrons are assembled in certain ways into atoms, nor why specific chemical atoms attract each other. Yet that we actually discover these complexes and their organizing relations is an empirical fact, and is perhaps all that can be said concerning the situation.

The question to which all this has been preliminary however is, how can any possible complex of psychons—of mere awareness—no matter in how complicated interrelations, or relations to other complexes, acquire that specific set of relations and those specific characteristics or qualities which characterize the physical world? How, in other words, can electricity and matter be intelligently described as a form of psychokinesis? Why is the difference between those particular complexes of psychons which are electrons not only a numerical difference, but also a spacial separation?

Now it may be said that, as a possible conception, the mere statement of the fact that electrons are complexes of psychons is not so paradoxical as it

first appears. In mathematics a line, which is extension, is defined as composed of an infinite number of points which have no extension. The extended is defined as composed of non-extended units. There exists no logical objection, therefore, to the conception of a complex possessing extension whose component units are unextended.

But how can the relational complex, or manifold, of extension come to supervene between certain psychokinetic complexes? Yet, here again, we are faced with only a special instance of the broader problem—namely, how do relations of any kind get themselves into existence? Or granted that they already exist, or "subsist," upon their own plane, how do they "get into action" so to speak upon the planes below?

It may be seen at once that the problem is fundamental, not only for Activism but for all philosophies.[1] That relations of many kinds do so seem to "descend" is obvious. It it were not so the

[1] In general the realistic position has been taken that relations are "external"—exist or "subsist" as real entities, real activities, upon a plane of their own. Yet the difficulty here is no greater for Activism than for other systems, and its solution does not determine, in any event, the validity of the theory of psychokinetic unit entities. The literature on the subject is, of course, voluminous. Possibly the best exposition of the realistic position is in Russell's "Problems of Philosophy" and E. G. Spaulding's "The New Rationalism", Henry Holt & Co., N. Y., 1918.

activities and complexities of the lower planes would not exist at all. And, here again, we shall content ourselves for the moment in merely stating the fact.

Granting the fact, the particular problem of psychons and electrons narrows itself to the question of how that particular relational manifold known as spacial extension comes to obtain between the specific complexes of psychons known as electrons. And the answer is that it is just the "irruption" of that particular relation of extension into the psychokinetic world that gives the specific character—the "quality" of extension—to certain complexes of psychons, creates, as it were, electrons out of psychons.

What special class of psychokinetic complexes, then, (since there well may be many classes) is that class between whose members this relational manifold of spacial extension obtains? And what are the relations that must exist between the psychons which compose the members of such a class?

In the first place the members of this class must be complexes organized according to those relations which constitute the spacial manifold.[8] In the sec-

[8] A psychokinetic complex is "in" space, when its organization includes those asymmetrical transitive relations which obtain between points, *i. e.*, when its component psychons are organized according to the type of a three-dimensional con-

ond place there must exist, as we have seen to be true of all unitary complexes, a non-additive relation—a relation such that the specific activity of these psychokinetic complexes shall be essentially something more than, and something different from, the mere sum of the activities of their constituent psychons. Assuming the hypothesis of psychons and their complexes which we have attempted to describe, however, there is no reason why we should not assume also the non-additive organizing relations involved in the spacial manifold to be applicable to a certain class of these complexes.

We shall define an electron, therefore, as a unitary complex of psychons where the organizing relations are those relations involved in the spacial manifold, but where the psychons themselves are unextended. And we are further justified in this assumption since, as an empirical fact, we actually find the relation of spacial separation to obtain between those specific complexes known as electrons. Why this is so, and what the exact nature of the psychokinetic order may be in those specific complexes, is another question. But all that is necessary to make these conditions logically possible is that the order

tinuous series (see Huntington, "The Continuum" chap. VI.). Or, less technically, a psychokinetic complex is spacially conditioned when its organizing relations include such relations as "above", "beyond", "at the side of", and the like.

here shall be an order characterized by certain non-additive relations. And this leads us at once to the larger question of the psychokinetic order in general.

The subject is abstruse, but certain suggestions, at least, are pertinent. In the first place it should be observed that the units of any plane may be "taken" in at least two ways, directly or in series. Thus, a number of points may be considered as merely so many points. They may determine lines, but do not as such compose lines. But taken non-additively a series of points forms a continuum—a line.

For the psychokinetic plane, however, due to the characteristic nature of the activities which compose it, there are certain special points to be noted. In the first place, while the relations between psychons are, in general, asymmetrical and transitive, in certain cases they may be symmetrical, as when psychons A and B are reciprocally aware of each other. Again, although other relational manifolds, as those of time and space, may supervene, these apply principally to other planes; they are not essentially involved in the psychokinetic order. The relations between psychons, as we have seen, are not fundamentally the relations involved in the spacial manifold. According to the general proposition, nevertheless, that the activities of the higher planes are always basal or essentially efficient for the activi-

ties of the planes below, but that the converse is not true, the spacial relations may "make a difference" to psychons, by organizing them into certain complexes, but not conversely, these relations being ideal beings of a higher plane. Also, the existence of psychokinetic entities, or the relations pertaining to them, may not, or may, make a difference to other entities. Intrinsically they do not, but under certain conditions they do. Generally, neither the existence of A nor its activities depend upon the awareness of B, but both of these facts may well depend upon this relation.

Here again the intuition of the common man is reliable. Usually your existence and behavior is quite independent of my knowing you. But often not only your behavior, but your very life itself, may directly depend upon this knowledge—namely in those instances where my awareness of you is an essential element in some more inclusive relational situation in which your existence or behavior is also involved. In this case, then, one awareness may be said to "cause" a change in another awareness. It does not necessarily do so. Awareness is not essentially constitutive. That it should be so depends upon other additional relations.

A psychokinetic complex, therefore, may be the reason for change in another psychokinetic complex. An electron, for example, may be "affected" by some

other complex not an electron. To enable this to come about it is only necessary that the requisite relational conditions should obtain. And that these conditions do obtain is empirically evident from the facts. The human organism, for instance, which is a complex of electrons, reacts to—is affected by—all sorts of extra-physical things—ideals, logical processes, relations as such (*e. g.* pastness, distance, and the like); and, if telepathy should prove demonstrably true, it might even react directly to other psychic processes than its own. Nor are these extra physical beings any the less efficient because they are not physical. And, of course, awareness is one of them. Hence (for want of a better word) to emphasize this "making a difference",—this efficient, dynamic quality—we have used the word "psychokinesis."

Yet just as the great majority of complexes upon any plane are normally unaware of—are unaffected by—any but certain complexes of the plane above, so the great majority of complexes upon the physical plane are unaffected by merely psychokinetic complexes. Material complexes, although fundamentally composed of electrons, are under usual conditions only slightly affected by electro-magnetic disturbances. It is only when material complexes are delicately organized—in states of highly unstable equilibrium—that they are sensitive to the "forces" of the plane above. In the same way

electronic complexes are generally minimally affected only by the activities of psychokinetic complexes. When, however, the lower complexes are sufficiently highly organized (as, for example, the nervous system of physical organisms) they become at once susceptible to the specific activities of the plane, or planes, immediately above them.

In general, therefore, when the units of any plane are found organized into those specific complexes which compose the units of the plane below, the interrelations of those lower plane units are in the form of the characteristic activities of that plane to which they belong. Molecules "interact" molecularly, not as chemical atoms; atoms chemically, not as electric charges; electrons electrically, not psychokinetically.

The complex of psychons which is an electron interacts with other electrons as an electric unit, not as a mere congeries of psychons. Its relations with psychokinetic activities, however, are as a psychokinetic complex and not as a unit of electricity. They are psychokinetic and not electrical. Its psychokinetic relations are inter-electronic. Proceeding from below the planes are progressively inclusive.

But how, it will be asked, can any such state of affairs obtain? How are the gaps between the planes bridged?

The general interrelation between the unit activities of the psychokinetic plane and the unit activities of the physical planes, in respect to their natures as respectively unextended and extended entities, has been described. The specific problem of motion in this connection, however, has not yet been examined.

Now, in the first place, it should be observed that, in order that a psychokinetic complex (or any other entity) should be correlated with motion, it is only necessary that it should be in the relation of "all terms of a continuous one-dimensional series T (Time) to some terms of a continuous three-dimensional series S (Space)." But psychokinetic entities are always, empirically at any rate, in relation to the one-dimensional series T. It is, therefore, only additionally necessary to prove that they are (or may be under certain conditions,) in relation to a three-dimensional series S.

If these conditions are fulfilled it is not necessary that the entity in question should be a material entity or spacial extended.[9] The geometrical point, for example, is neither. We have already seen, moreover, that there may be spacial relations between psychokinetic complexes. And that certain psychokinetic complexes at any rate are aware of spacial relations we have immediate empirical experience. It only remains to be shown, therefore,

[9] See Appendix. Relativity and Activism.

how in any specific instance the particular "some" terms of the three-dimensional series are correlated with particular psychokinetic entities, and how a difference in the intensity of these entities is correlated with a difference in the terms of the three-dimensional series with which it is related.

Now in general it may be said that the greater the range of any psychokinetic complex, the more will be the terms to which it will be in relation. So that if $\frac{S}{T} = V$, (S, of course, being taken here as that particular SR which we call D, namely a number of terms in the three-dimensional series, S,) and we find that as S (the number of terms) increases, so, proportionately, does V; we have, in this case, intensity of psychokinesis correlated with velocity. For since all the terms, except its own component parts, to which an electron as a unit is related are either spacially or temporally conditioned, an increase in the number of these terms means a corresponding increase also in the terms of the spacial series, S, or the temporal series T.

This may be considered to occur as follows. Let us suppose the number of psychons in an electron to be increased. The psychokinetic intensity of the electron, then, is increased proportionately. Now one of the elements of intensity is range—inclusiveness—the number of things to which the complex in

question is related. But the "things" to which an electron is primarily related are all correlated with the terms in the one and three-dimensional series T and S. Therefore the increase must take place in the number of terms either of S or T. And such an increase is, of course, either an increase or decrease in velocity.[10] Such changes in velocity are acceleration or retardation. But, if, in this case, change of velocity is correlated with change of psychokinetic intensity, it follows that when either of the two correlates does not change, the other correlate will be unchanged also.

Well; we can see, in a general way at least, how the activities of the psychokinetic plane can be correlated with the activities of the electrical plane below. Under exactly what conditions, however, any specific correlation may occur is another question. There is, however, an obvious set of circumstances with which we are all familiar where the correlation strikingly exists. And that is, in the case of organic life, particularly in that of the higher organisms.

According to our hypothesis, then, the universe with which we are in any way familiar appears to be a stratified affair, transversely divisible into

[10] The reference to the terms in the three-dimensional series S are to points as determinants of finite distances, not to points in space "as such".

what, for want of a more precise word, we have called planes. The collective activity of any plane being generally more inclusive and intense than the activities of the planes next below, although, in general, a more highly organized complex upon a lower plane may possess greater intensity than a less highly organized complex upon the plane, or planes, above.

A progressive analysis, furthermore, of the characteristic activities of the different planes beginning with the lowest always reaches a point where, since the analysis can be carried no further upon the particular plane under investigation, the activities of that plane inevitably break up into complexes of the characteristic activity of the plane above. Matter is dissolved into electricity, electricity into psychokinesis, and psychokinesis, presumably, into the static activities of the still more remote regions.

Each plane, moreover, possesses its own characteristic unitary complexes, only certain specific kinds of which go to form the basic units of the plane next below. And, generally speaking, the interrelations of activities upon the different planes exist only between the basic units of one plane and their parent activities upon the planes above. The characteristic complexes of the psychokinetic plane, for example, are those awareness complexes known to us in "conscious" phenomena; only those complexes

organized after the manner which we have just pointed out forming electrons. The characteristic complexes of the plane of electricity are charges, currents, magnetic fields and the like, only certain specially organized groups of electrons forming atoms.

There is, however, a further point to be noted in connection with the interrelation of the activities of the different lower planes. And that is that when the velocity of vibration or rotation (when such conditions exist) of the units upon any plane is increased beyond a certain point it may give rise to, processes upon the plane next above.

Molecular vibration, when sufficiently intense, may set up chemical action; chemical action, when sufficiently intense, may iniate electric disturbance. By analogy, also, it may be presumed that electric disturbances of sufficient intensity may set up a certain amount of psychokinetic activity. In short the activity of any plane may be in dynamic relation with the activities of the planes immediately above and below it. And finally this condition of affairs is found to be possible because we have seen that the extended can exist when its component units do not, themselves, possess extension, and that motion can exist when the moving entities are not material or physical entities.

A psychon, according to our hypothesis, possesses, essentially, neither spacial position nor extension. Inclusion of psychons in a psychokinetic complex, therefore, does not necessarily imply a spacial inclusion. When the organizing relations involved in a complex of psychons, however, are the relations constitutive of the spacial manifold, the psychons so organized are in relation to that manifold—they have spacial position. In this case, also, the complex of psychons so organized has not only spacial position but extension as well, although the individual psychons which compose the complex do not possess any extension.[11]

An electron, then, which has both spacial position and extension, is held by the Activist to be composed of psychons which essentially possess neither; although here they are necessarily "in" space owing to the specific character of the relations by which the unitary psychokinetic complex, called an electron, is organized. The component psychons, how-

[11] Since psychons are assumed to be entities not essentially in relation to the spacial manifold, it follows that a psychokinetic change does not necessarily imply change of position or motion. The conception of motionless change, however, is by no means illogical; for there exists, even in the physical world, one instance at least of a change which is not itself motion. Acceleration is change of velocity—or rate of

ever, do not first have to be "in" spacial positions, they "get into" them through being organized by the relations of the spacial manifold.

Furthermore, since an electron is composed of psychons, an increase of psychons in an electron necessarily increases that electron's amount—its intensity. And since the only change which can take place in an electron's activity is a change in its mass or motion, it would seem to follow that an increase in the psychokinetic intensity of an electron must be correlated with a change in its mass or motion.

Just, then, as an increase of electrons in an atom changes the atom's electric charge and mass, so an increase of psychons in an electron changes the electron's intensity and its mass or motion.[12]

motion, but acceleration is not itself motion. The change in the relations of a moving body to the time series involved in acceleration is not in any sense a "motion", since both the time series and the relations of any entity to it are non-spacial altogether. They are elements in, or logically prior to, motion and acceleration. For the Relationist position in this matter see Appendix.

[12] The phrase "mass or motion" is employed here on account of the generally accepted theory that the mass of an electron

appears to depend largely upon its velocity. Very little is yet known about the structure of an electron. It is possible that it may be best described as a series of concentric fields of force; and if so, it is possible also that such fields of force might contract or expand in relation to the center. In any event it is difficult to see how any possible change in an electron would not involve change in its mass, or velocity, or both. A recent discussion of this subject may be found in "Relativity and the Electron Theory" by E. Cunningham. Longmans, Green & Co., 1915, p. 65 ff. See also Appendix on Activism and Relativity.

CHAPTER 7

CONSCIOUSNESS

In speaking of the characteristic activities of the psychokinetic plane the term "awareness" has been used rather than the term "consciousness". It is more fundamental and has acquired less ambiguous meanings. As consciousness, however, whether considered exclusively in its relation to a physical organism or regarded as an activity in its own right, constitutes that form of awareness with which, from our own immediate experience, we are necessarily most familiar, it is essential to examine its specific conditions in some detail.

Consciousness is the name used to describe a form of awareness highly complex by reason either of its own nature, or of its correlation with an elaborate nervous structure whose functions are both widely selective and closely integrative.[1] From the point of view which we have developed it would be also a psychokinetic complex, unitary at least to the extent of its integration.[2]

[1] The term "consciousness" is by many writers not limited to complex awareness. For our purpose it seems better to restrict the word to its narrower meaning.

[2] That consciousness is unitary to the extent of its integration would be true upon any theory as to its real nature. If it is only an "aspect" of the nervous system, its integration is substantially that of the nervous system itself. If it is a rela-

For the Activist, then, the problem narrows itself to a question as to the nature of certain highly organized psychokinetic complexes, and the specific sort of relations existing between them and the physical complexes with which they are associated.

It should be noted here, moreover, that the general problem remains the same, whether the constituent elements (ultimately psychons) of the physical and psychokinetic complexes are the same, or whether the two complexes have only a certain portion of their elements in common, or whether their elements form complexes which are separate and distinct. For in any of these circumstances the activities of the different planes would be different, even though their constituents were altogether or partially identical.

The problem of consciousness, however, evidently involves a quite special case of this general interrelationship, namely the relation between one specific sort of psychokinetic complex and another equally specific sort of psychokinetic complex—the relation between a living material organism and the par-

tion or relational complex between the organism and its total environment, its integration is the integration of those relations.

C. S. Sherrington. The Integrative Action of the Nervous System. New York, 1906.

Edwin B. Holt. The Concept of Consciousness. George Allen & Company. London, 1914.

ticular consciousness connected with it. There exists, nevertheless, according to our hypothesis at any rate, no intrinsic difficulty in the way of an adequate description of such relations in general. It remains to describe if possible just how this general relationship between psychokinetic and physical activities is involved in the specific instance with which we are dealing. And this depends largely upon the special structure and functions of the physical organism on the one hand, and the special nature and processes of the psychokinetic complex on the other.

As regards the physical organism it is unnecessary for our purpose to enter into the detail of either its structure or function below the nervous system. Such investigations belong strictly to the biological sciences. Nor is it even essential to examine the structure or functions of the nervous system as an integrative mechanism. This field belongs to the physiologist. The only thing that is of special interest, at this place, is the nature of the nerve impulse itself, since it is here if anywhere that exists the point of immediate contact between the psychokinetic and physical activities.

Now as to the exact nature of the nerve impulse there are almost as many and diverse opinions as there are investigators. There is, nevertheless, one well-established fact in connection with it. And

that is that, whether or not as a whole the nerve current is in its nature electrical, or whether the method of transmission along the fibres is primarily chemical, there is always associated with this transmission an "action current", so called, which is purely an electric phenomenon. And, furthermore, even if this were not so, not only can the nerve impulse be directly stimulated by even minute electric disturbances; but in general all chemical activity can only be regarded in the end as fundamentally electrical in character. Any sufficient electric disturbances at the cerebral cortex, therefore, or any variation of the electrical conditions already existing there has an effect upon the activities of the nervous system.

Let us suppose, then, a psychokinetic complex to be in such a relation to the activity of the afferent and efferent nerve impulses at their main point of interaction—presumably the cerebral cortex—that some at any rate of the psychons which compose that complex are in efficient relation with the psychons which ultimately lie at the base of the physical activity of the cortex itself. This relation might exist in a variety of ways. The cortical psychons and those of the psychokinetic complex might be actually the same, "taken" in two different orders. Some of the cortical psychons (those, for instance, forming the electrical positive nuclei of the atoms) might be involved; or those only in a cortical electro-

magnetic field, if such should exist; or the psychons in the electrons of the nerve impulses themselves; or those in the electrons of the atomic structure of the synapses.

Be this as it may, a change in the intensity of the psychokinetic complex, or the immediately related portion of it, would be correlated with an intensive change in cortical activity. For just as the addition or subtraction of one or more electrons alters an atom's electric charge, and causes it to attract or repel other atoms, so the addition or subtraction of a sufficient number of psychons may be considered to alter an electron's psychokinetic intensity, and change its dynamic relations to other electrons. Awareness between electrons, as we have already seen, would then vary with the variation in their psychokinetic intensity. In other words, the increase or decrease of the psychokinetic intensity of an electron increases or decreases its range, the extent of its awareness of other relations. As an activity, therefore, its capacity for reaction is altered to exactly the extent of that increase or diminution.

But how, it has been asked, can this increase in merely psychokinetic intensity bring about an alteration in the physical relations between electrons? How can the increased awareness of one electron be anything but a change in its awareness of another electron. Or, conversely, how can an alteration in

the physical relations between electrons be in any way correlated with a change in their psychokinetic intensities?

As can readily be appreciated the question is a crucial one. A solution of the problem, however, is not impossible, as was shown at the conclusion of the last chapter.

Should we accept the explanation given there, the problem no longer assumes the portentous character of an inquiry into fundamental principles, but, difficult though it may be, becomes restricted at once to the application of those principles to certain specific instances.

As we have observed, a change in the psychokinetic intensity of an electron is directly correlated with a change in its mass or motion. In this case, also, the converse is likewise true, since (excepting in the case of a solitary electron out of all relations with other electrons) an alteration in the motion of an electron necessarily alters its relations to other electrons and in consequence its awareness of the difference in their spacial position.

Let us now assume a psychokinetic complex in immediate relation with a complex of electrons, so that there is at any rate a partial correlation between the activities of each. What exactly will the interrelations be?

Up to a certain point the situation in the physical complex is fairly well known. It seems certain that at the great cerebral centers, and presumably at the cortex especially, there is a constant inflow and outflow of the nerve impulses together with, it is supposed, chemical and electrical changes taking place at these points concurrently. Such being the case, there will be at these same points a continuous increase and decrease in psychokinetic intensity due to the alteration of either the velocity or direction of the moving electrons constituting the action current, as well as the electrical changes lying at the base of whatever chemical changes occur. Presumably at these points, also, the interrelations between the physical complex and the psychokinetic complex with which it is correlated will be most clearly apparent.

Let us suppose, then, a nerve impulse to traverse a certain one of these points, say at the synapse between the pyramidal cells at one of the sensory centers of the cortex. Under these conditions the psychokinetic intensity at this point will be increased with the motion of the electrons there. This will be true, moreover, whatever the exact nature of the motion may be. It may be translative as in the stream of electrons which constitute an electric current, an acceleration of a current already existing, or the disturbance of an already existing elec-

tric field, or a change in the rotary or vibrational velocities or directions of the electrons which constitute the atoms of the nerve fibrils.

Furthermore this increase of psychokinetic intensity will be immediately felt in the psychokinetic complex of which the psychons at that point are either an actual part, or with which they are in correlation. The nature of this correlation might be of a good many different kinds. It might consist of whole or partial numerical identity, of spacial propinquity, of some as yet unknown efficient relation; or it might be purely a psychokinetic correlation due to the influx of psychons from the electrons into the psychokinetic complex or vice versa. That a correlation of some sort actually exists is, however, directly evident from the empirical facts.

Conversely also a change, or certain kinds of change at any rate, in the psychokinetic complex will be reflected in a change of motion or direction of the electrons at the point in question consequent upon the change of their psychokinetic intensities.

Yet although we must assume this reciprocal relationship, the picturing of its precise nature is not altogether easy, since we find ourselves perpetually prone to imagine psychokinetic units or their complexes wholly after the manner of physical entities.

Let us suppose, nevertheless, a portion at least of our psychokinetic complex (although the suppo-

sition is purely diagrammatic and probably quite incorrect) to be in the form of a spacially extended group of psychons, a sort, if you will, of psychokinetic field. And let us suppose, further, the electrons of the nerve impulse, or those in the atoms of the nerve fibres themselves, to be moving through, or revolving within, this "field." Now whether the nerve impulse be altogether electric in character, consisting, that is, of a current or moving stream of electrons; or whether it be chemical, in which case the interatomic electronic revolutions or vibrations, or the electrons of the charge which the atom carries are primarily affected; or both electrical and chemical—in any of these events the psychokinetic intensity of the electrons in the field will be increased with the influx of that impulse. And as electrons are, *ex hypothesi,* also themselves psychokinetic complexes, an increase in their intensity involves a corresponding increase of intensity in the field so long as the electrons are moving through it, or revolving in it, as the case may be.

In general, likewise, the condition of heightened intensity would last just as long as the influx continued. Conversely, an increase of intensity in the field from any other source than that of the inflowing electrons would increase the intensity of the electrons already in the field, and therefore, according to the general theory of interrelationship

outlined, set up an electrical activity among them.

The only condition that it is necessary to posit in order that such a state of affairs should obtain is that the hypothetical psychokinetic field in question should be coterminous spacially with some portion of the line of flow of the nerve impulse (or of the nerve fibre itself), so that the electrons of the impulse (or the atoms of the fibre) should be within the field itself at that point.

Now this presentation of a possible manner of correlation is obviously crude, and the actual conditions are presumably much more subtle and complex. It gives, nevertheless, some general idea of how such a correlation might actually exist.

Should the locus of correlation between the psychokinetic complex and, at any rate, the efferent nerve impulse be interatomic, moreover, there already exists a well-known experiment in physics which points strongly in the direction of an explanation as to how such a condition might occur.

This is the experiment known as the Zeeman effect.[3]

[3] Righi's Modern Theory of Physical Phenomena 1 (N. Y. The Macmillan Co. 1909) p. 14 ff. and Robert W. Wood's Physical Optics, (N. Y. The Macmillan Co. 1911) p. 500 ff., both give an excellent discussion of Zeeman's classic experiment. There is also some experimental evidence, as yet inconclusive, which appears to indicate the possibility of some such psychokinetic effect upon the interatomic motion of electrons as the one which has been suggested.

When an incandescent gas is subjected to the influence of a strong magnetic field, and its spectrum examined through a sufficiently powerful telescope, the influence of the magnetic field, as the current is turned on, is clearly shown by the splitting up of a single characteristic spectrum line of the gas into two or more separate lines. This singular effect is produced by an alteration in the rotation or vibration of the electrons within the gaseous atoms; which alteration, in its turn, changes the frequency of the light waves propagated by these whirling or vibrating electrons. The effect of this change of frequency is then visible through the spectroscope as an alteration in the lines of the spectrum.

Now if in place of the magnetic force which, of course, acts upon the moving electrons in the atoms from without, we may imagine a psychokinesis "acting upon" the electrons from within, through the heightening of their psychokinetic intensity and consequent increase of velocity, we should find a change in their periods of rotation or vibration similar to that which can be observed in the Zeeman effect. And if that change were sufficiently great, we should expect electric, or possibly even chemical, changes to follow in the physical system in which the change occurred.

Furthermore, if this description of the correlation between a psychokinetic and physical complex

as essentially interatomic should be in any way correct, it obviously falls into line with the general law already laid down that the interrelation of the activities of the different planes take place by means of the fundamental unit activities of these planes—by reason, that is, of the fact that the fundamental units upon any plane are always unitary complexes of the fundamental units of the plane next above.

Well—it has been pointed out here, in a general way, in what, for the Activist, the psycho-physical correlation may be considered to consist. It remains to be shown how the variation of intensity in the psychokinetic complex itself may be held to constitute the different psychic processes with which we are familiar.

Now upon any theory the problem of the relation between awareness and its object is obscure and complicated enough, and perhaps the most that can be hoped is that the hypothesis under consideration may prove a little less unsatisfactory than the more traditional explanations. At any rate it possesses the obvious advantage of being free from one of the principal difficulties of the older theories; since, for it, objects do not have to be somehow "gotten into" consciousness, for as fundamentally themselves awareness, simple or complex, they are already "there" from the start.

The problem, then, may be stated as follows: (1) Under what conditions is one awareness (simple or complex) aware of another awareness; and (2) How far can the qualitative differences of awareness be correlated with difference of "intensity" as we have defined that term.

The problem of the "transmission of the qualities" of an object by a dynamic mechanism whose activity is measured altogether quantitatively, as light and heat by ether waves, or sense qualities by the nerve impulse, is a further difficulty which exists for all theories alike and which need not be examined at present. For the moment, also, the first question (1) may be passed over, since it is obviously the second (2) that concerns us most immediately at this point.

Can, then, the *intensive* differences in a psychokinetic complex explain in any way the *qualitative* differences of the psychic processes? Thus stated it is, we see at once, the old question, although in a slightly unfamiliar guise, of the compounding of consciousness. How can one get quality out of quantity, color out of light vibrations, feeling out of sensation, and all the rest of it? And yet, if one looks about, the world is full of just that sort of thing. Organisms are composed of cells, but they behave as indivisible units, possess "qualities" that no amount of cells "as such" could possess. So do

cells possess "qualities" unpossessed by atoms or electrons. Everywhere we find unitary complexes possessing functions and apparently unanalyzable characteristics—qualities—which their component units, either singly or in groups, do not possess. So on all sides we discover the "compounding" of activities. There would seem, therefore, to be no peculiar difficulty in assuming the same general condition to hold also for those special activities which we know as conscious processes. It is simply a question as to how in that particular case the "compounding" may be considered to take place. The fact that we are unable to trace the conditions accurately does not constitute a valid reason for denying their possibility.

But let us briefly re-examine just what is meant by the term "intensity", as we have used it, in connection with a psychokinetic complex. As a standard of measurement for activity in general, including of course psychokinesis as an activity in particular, it involves the elements of amount, range, persistence, and exclusion.

Now the intensive variation of a psychokinetic complex as regards persistence, or duration, is comparatively simple to understand, since it is not difficult to imagine any condition in such a complex as lasting for a shorter or longer period of time. Exclusion also, empirically at least, is clearly enough shown in the phenomena of attention, the principal

characteristic of the attentive state being the exclusion of extrinsic content. Moreover range—the extent to which the complex in question "makes a difference" to other activities—need not concern us at this point.

The remaining element of intensity, however, has a special bearing upon the immediate problem. For amount is essentially connected with content—the "number of things" of which a psychokinetic complex is aware. The more or less of psychons, or their subsidiary complexes, in any given complex implies, *ex hypothesi,* a more or less of awareness objects. This follows from the mere fact of the more or less of the relations involved. Increase in intensity in this case signifies, the other elements being equal, increase in content, and variation of intensity variation of content. If there could be discovered, therefore, the specific increase of intensity in a given psychokinetic complex—the specific increase in amount, or content—due to a specific relation to some other specific activity, the main part of the problem, for the Activist at any rate, would thereby be solved. For if we could discover in any given case the exact intensity concomitant, for example, with the presence of a specific sensation, the psychokinesis involved at that specific intensity would be the sense datum itself.[4]

[4] For the additional element of periodicity involved here see p. 80 ff.

Now of course any theory whatever is necessarily faced with this problem in one form or another. Even purely physiological psychology cannot escape it. How, for example, do specific degrees of light vibrations get themselves reproduced, or exemplified, as correlated specific neural processes in the optic centers?[5] And since they obviously must, in some way, represent these discriminations, it does not add to the general theoretic difficulty to suppose them to be equally well represented in the variations of psychokinetic intensity.

In some cases at least, moreover, a consideration of the essential nature of the psychokinetic complex and its intensive changes may lead to a more adequate description of this correlation.

Let us take the simplest example—that of sensation; and let us assume—although possibly without warrant—that a simple sensation can exist.

An approximation might be found in the sensation obtained upon suddenly awakening from sleep, in an open field under a cloudless sky. Momentarily at any rate then, it would seem that celestial blueness would be the sole visual sensation.

[5] For an excellent discussion of this problem from the point of view of psysiological psychology, see "Human Psychology", p. 435 ff., by Howard C. Warren, Houghton Mifflin Co. 1919.

Now the particular blue which would constitute the sense datum under these circumstances is caused, as we all know, by certain definite stimuli (wave motions of the ether presumably) impinging upon the retina with a certain definite periodicity. And this periodicity would naturally be reproduced (whether discretely or "summed up" in some way) in the periodicity of intensive changes in the psychokinetic complex. Objectively, of course also, vibrations of just that periodicity are blue light of just that shade. Why then should not just that periodicity of intensive psychokinetic variation be also the same blue light "subjectively" in the awareness complex itself?

According to this suggestion "blue" is intrinsically a certain definite periodicity *no matter* where it occurs. As etheric waves it is color as light, as intensive psychokinetic variations it is color as sensation. Color, then, will be both in the object and in the mind, and yet be the same color.

Although no theory of color is free from difficulties, the realistic theory here put forth seems on the whole to possess at least the merit of a certain simplicity. It assumes (1) that the periodicity induced (as psychokinetic or possibly electronic changes) upon a material surface by the impinging light rays (white sunlight), as modified by the structure (psychokinetic or electronic) of that surface, *is*

the color of that surface. It assumes (2) that light of the *same* periodicity—the same color—is, then, reflected from the surface, and (3) transmitted, in some as yet undiscovered way, through the nervous system, until, finally, the *same* periodicity is reproduced in changes of psychokinetic intensity—*i. e.*, in consciousness.

Whether the color "quality" results from "summing up," or some other characteristic associated with such a periodicity as a series of changes, is a further question. It would seem however legitimate to assume that, even were this the case, the "summing up," or other characteristic involved, would be present in any psychokinetic complex, whether that complex were the surface of an "inanimate object" or the awareness centers of a living organism.

The same thing would also be true of all the vibratory phenomena and their correlative sensations—sound, heat, electric stimuli, and the rest of them.

What is called, in technical psychology, "intensity", *i. e.*, degree of loudness, brightness, etc., is purposely left out of consideration at this point, because it is so largely relative—due, that is, to the general intensive "level" of the psychokinetic complex, as well as so intimately connected with the subject of attention. The problem of its correla-

tions also is obviously much simpler, since a more or less of the same sort of phenomenon is essentially quantitative from the start.

There are several other points, however, to be noted briefly here.

Color, as we know, considered psychologically, may vary in three ways, hue, tint, and chroma.[6]

Hue is accounted for by the periodicities of psychokinetic change corresponding to light wave frequencies.

Tint is quantitative, induced principally by light wave amplitude, and is represented by the amount of psychokinesis involved as the result of any given visual stimulus.

Chroma, which is due to saturation, or the quantity of white light mixed with the pure spectral color, is somewhat more complicated. Nevertheless, when it is considered that almost any number of periodic changes may go on at the same time in a sufficiently developed psychokinetic complex the problem seems less serious. White light itself is a complex of such periodicities, and the amount of saturation is simply due to the extent to which this complex enters into a further complex composed, in its turn,

[6] Titchener's classification is followed here. Breeze and some others use "tint" as an equivalent for light shades; Warren uses it for chroma. Possibly "color-brightness," or "color-shade" would be a better term. See Warren "Human Psychology," pp. 165 ff.

of white light and the periodicity of a pure spectral color. The awareness here, therefore, is of this further complex as a whole—the awareness content, sensation, being the unitary complex of just these psychokinetic periodicities.

Black, again, or the absence of color periodicities, is only perceived as a color by means of light. For even as darkness, when opening the eyes at night, it is never wholly free from the retinal luminosity, the contrast, psychokinetic change, between it and light being either perceived or remembered.

Nor should it be forgotten that, empirically at any rate, psychic content is always changing and so involves psychokinetic change; and that a psychokinetic decrease in intensity may be just as positive a sensation as an increase of intensity.

Space perception is a knottier question. For although we have shown how a psychon, or a psychokinetic complex, can be in relation to the spacial manifold (Chapter 6, p. 62 ff.), we have not shown definitely how it can be aware of such a three dimensional series. It seems clear, also, that this relation can exist without implying any awareness of it.

The problem is difficult enough upon any theory. If we start, however, with the conception of such a sensation of crude extension—of undefined

"amount" of color—as our awakened sleeper would probably receive from a cloudless blue sky, the problem becomes simpler.

For any psychokinetic complex is characterized by the "amount" of its psychokinesis—the number of psychons which compose it. The extent, therefore, to which the periodicity of any activity with which a psychokinetic complex is in relation can be reproduced in the complex, is necessarily limited by the "amount" of activity to which the periodic condition applies.

Now the periodic change in psychokinetic intensity here must be a recurrent increase and decrease in either range or amount. It would seem nevertheless simpler, in the case of an impinging neural stimulus, to consider it a periodic change in amount due to a periodic increase and decrease in the electric current (stream of electrons) associated (or identical with) the nerve impulse.

Physiologically this is correlated, of course, with the extent to which the end organ in the case of any given stimulus is involved, and, presumably, with the number of nerve fibres implicated or the quantity of nerve impulse transmitted, or both.

Psychokinetically it is correlated with the extent to which the psychokinetic complex is involved. The quantity, for example, of light waves set in motion by a single rotating or vibrating electron would

obviously be less than the quantity of waves set in motion by a hundred vibrating electrons. The number of psychons accordingly, whose periodic intensive changes could be affected, would vary with the amount of the waves with which they were in relation. There would be more or less of the same color as there was a greater or less amount of etheric waves. And this condition is, as a matter of fact, rather neatly exemplified empirically; for in the purest cases brightness and size (extent) seem to be substantially the same, as in the fixed stars where there is no real visable extension, but only an apparent extension due to brilliancy.

The simple sensation of space then—of crude extension—appears to be directly correlated with amount, the "extent" to which the psychokinetic complex is involved. If all the psychokinesis possible, for example, is set changing intensively with a certain periodicity by the total physiological activity of the optic nervous mechanism, the sensation involves the entire field of visual awareness. The color has the maximum extension. The colored "surface" fills the whole field. If the minimum amount of psychokinesis is involved, the sensation is of a mere point or speck of the same color.[7]

[7] This would still be true even if the "extension" were wholly relative to fixation distance, and the angles of the horopter.

Moreover, since the psychokinetic complex may be supposed to be in spacial relation with the different nerve fibres at various points spacially distinct, it may well be considered to be itself aware of these spacial differentiæ and, to that degree at least, directly aware of spacial extension—its own spacial relationships between spacially distinct portions of its own unitary complex.

For when the spacial relations in which a psychokinetic complex stands are of such a character as directly to affect its intensive variations, it is clear that an awareness of those special relations, in so far as they affect its intensity, must exist also. And a psychokinetic complex in spacial relations with a complex system of nerve endings (or cortical centers) is in just that situation.

It would seem, therefore, to be by no means impossible to correlate at least the sensation of crude extension with psychokinetic intensity.

In a brief essay, however, it is impossible to work out the problem in detail—form, contrast, and all the rest of it. All that can be done, and all that is really necessary here, it to show that the general principle of such a correlation can be established.

It would appear then that, for the Activist at any rate, such qualities as color and spacial extension can be "gotten over" into sensation, can be stated in terms of psychokinetic intensity. Color can be

"gotten over" because, as essentially a certain periodicity, it "is" wherever that particular periodicity occurs.

Extension can be "gotten over" because a psychokinetic complex may not only be in relation to the spacial three dimensional series, but also may be aware of its own intensive condition concomitant with its relation to that manifold.

There remains to be considered the differences between the kinds of sense data furnished by the separate sense organs. How can sound, light, touch, and the others be stated differentially in intensive terms?

At first sight this would seem impossible. For the essential characteristic of these separate senses seems to be an unanalyzable qualitative differentiation. Nevertheless in this case also the distinct periodicities which characterize the stimuli that give rise to the various classes of sensation may prove, when stated in terms of the same periodicities of intensive change, entirely adequate to account for the different orders of sensation.

Touch, for example, may well be a change of intensity simply quantitative, the "amount" of it constituting the "mass" or extent of pressure felt: Sound, a change of intensity characterized by a relatively slow periodicity—40 to 40,000 per second, roughly: Light an enormously rapid psychoki-

netive periodicity—some 400,000,000,000 per second and upward. While taste and smell may be certain specific periodicities due to chemical changes excited at the respective end organs.

How such enormous variations in periodicity can be taken up and differentiated by the nervous system is a problem for the physiologist. There would be good reason to suppose, however, that psychokinetic discrimination would be more delicate in every way. The great gaps, also, between the various series of periodicities—as, for example, between light and sound—might account for the awarenesses of these widely separated series as distinct sensations.

Our point, however, is that these respective periodicities *are* pressures, colors, sounds, and the rest, *wherever* they occur, so that when they take place in the intensive variations of a psychokinetic complex, they are *there,* actually, where they *do* take place. And since, *ex hypothesi,* its own intensive conditions and changes are essentially the things of which such a complex is immediately aware, those intensive changes which are color, sound, touch, and the rest, constitute the sense data themselves.

The localization of certain sense data—as spacially "external"—of certain objects as "out there"—is of course a further question. It seems not improbable however that this awareness of spacial "externality" is a complex matter requiring inference—

the additional relations involved in at least rudimentary "thought"—and that such "externality" is not immediately given.

The localization of sensation in various parts of the body, again, may perhaps consist in that co-ordination of any specific intensive change with the awareness of spacial relations which has already been discussed.

The whole problem is complex enough upon any hypothesis. It would seem, nevertheless, that we are justified in assuming that a psychokenitic complex is aware of the different sense data which reach it through the separate cortical centers as distinct sense data. Their periodicity might be similar (as from similar pressures upon different parts of the body), but these periodic changes might well involve distinct sub-complexes within the whole psychokinetic complex, and thus still carry with them the relation of separateness between them into the general awareness.

Pain is more difficult to explain intensively, but it may perhaps be, finally, some sort of disruption or syncopation of the normal rhythmic periodicities either in themselves or their complex relations.

Feeling, as technically employed by the phychologists, is usually restricted to the awareness of pleasantness or unpleasantness; and it is better, for

us here at any rate, to confine ourselves to this fundamental conception of it.

Although in a certain sense immediately given, since its essential character depends upon the nature of the stimulus, it is obviously conditioned also by the response, since the same stimulus may, under different circumstances at different times, give rise to quite opposite feelings. Like the sensation of pain it is probably due principally to the disturbance, or brusque interruption, of the normal psychokinetic periodicities already dominant in the psychokinetic complex. This arhythmic quality would account for the fact that the same feelings are not always associated with similar stimuli, for the disruption is relative; the state of the complex at any moment, as well as the nature of the stimulus, being a controlling factor. This disruptive quality is clearly enough shown in ordinary language by such vernacular phrases as "it jars me", "it upsets me", and the like. The quantitative measure of the feeling, also, can evidently be measured by the usual intensive elements of amount, range, duration, and exclusion.

Unpleasantness, then, would seem to be the generic appellation for arhythmic psychokinetic disturbances, and vice-versa: the smoothness of flow of the interrelated periodicities being pleasantness, and its opposite unpleasantness. Where the rhyth-

mic quality, or its opposite, is of insufficient intensity to be a conspicuous factor in the awareness of the moment, the feelings remain neutral or practically unaroused.

In passing, also, it may be noted here that rhythm, or the lack of it, is an important element in processes of all kinds, including changes in psychokinetic intensity, and that as a fact in itself apart from the specific processes of which it is an element, it has not been sufficiently emphasized of late. It is, says the much maligned Spencer, "the characteristic of all motion"; and he might well have added, of all change. It plays unquestionably, upon any theory, a conspicuous part in determining the specific "qualities" of many of the pyschic processes.[8]

[8] This whole subject of rhythm, whether psychologically or intrinsically considered, has occupied, perhaps, too little of the scientific attention. It may well be a much more important determining element everywhere than is generally recognized.

Certain Oriental systems have recognized its importance, but among us Westerners, Herbert Spencer and John Fiske are among the few who have treated it philosophically in any detail.

As an essential factor involved in emotion it is by no means improbable that further investigation would reveal an intimate connection between arhythmic and abnormal conditions, either neural, psychic, or both, especially in the cases of the so-called "affect psychoses."

Herbert Spencer. First Principles. Chapter 10. (N. Y., D. Appleton & Co., 1898.)

John Fiske. Cosmic Philosophy. Part 2, Chapter 2. (Houghton Mifflin Co., Boston and New York, 1892.)

So much for sensation and feeling. Another immediately given element which enters into the psychic content is imagery.

Now the difference between a specific sensation, say of color, and the corresponding image of it seems to be fundamentally quantitative, at any rate when measured in terms of psychokinetic intensity as we have defined it—the elements of intensity being, as will be remembered, amount, range, persistence, and exclusion. In regard to all of these elements the image is quantitatively less than the sensation. Its amount is less—it possesses less vividness, "intensity" in the ordinary psychological sense. Its exclusion is less,—its hold on the attentive field is less firm. Its duration is less—images are notoriously fleeting and evanescent. And its range is less—it possesses less clearness, is characterized by precision in a more restricted number of details. It will, nevertheless, be an image of the same color notwithstanding its inferior intensity (in any or all the elements thereof) because its periodicity is the same. And since that particular psychokinetic periodicity *is* that color (as sensation); where the periodicity is there will the color be also, whatever its intensity may be.

Perhaps attention should be again called to the fact that the "locus" of the periodicities with which we are dealing here is in the psychokinetic complex.

A color, as a *certain periodicity,* is in the object, the awareness complex, and the connecting media—is, in fact, all along the line. But a color as a *sense datum* is essentially in the awareness complex itself. Such a "locus", however, does not necessarily imply spacial position. It implies psychokinetic inclusion only.

Yet, if this is all there is to it, how can an image be distinguished from a similar sensation of sufficiently feeble intensity, or a sufficiently intense image from a sensation? The answer is that it cannot. If a sensation is sufficiently feeble in all of the three intensive elements it cannot be clearly distinguished from an image.[9] If an image possesses all three of them to a sufficient degree, it becomes a hallucination.

It is perhaps needless to say that under normal circumstances in broad daylight these limiting conditions are scarcely ever reached, and that in practice the distinction is usually both easy and and definite.

The images with which we are ordinarily familiar, however, are not of the simple kind which, for the purposes of a clearer analysis, we have been discussing. On the contrary they are nearly always

[9] The experimental demonstration of the essential similarity between image and sensation is discussed at length by Titchener. A Text-book of Psychology. The Macmillan Co. N. Y. 1910, p. 197 ff.

memory images, or at any rate presentations in which some reference to past experience is implicit. And this brings up at once the problem of memory and its relation to psychokinetic intensity.

Now there are three fundamental questions in regard to memory and memory images. One is the problem of retention; the second the problem of reference, or relation to the past; and the third, the problem of reference to the specific time of any past event.

The first problem applies to all images, since obviously any image, either as a whole or in its constituent elements, depends upon past "experience" of some kind. The subject is obscure and has never been satisfactorily explained, but the generally accepted view seems to be that any organic complex which has previously responded in certain ways to specific stimuli, may be impelled to similar (although usually less intense) responses either by a repetition of the original stimulus, or by an indirect arousal of the secondary responses through some interrelated processes—as *e. g.* the neural processes connected with the associational centers of the cerebral cortex. According to this view there is, of course, no "retention", strictly speaking, aside from the tendency to similar response—the revived response being differentiated from an initially aroused psychic process by those qualities—lack of clearness, duration,

strength, etc., which have already been noted as distinguishing imaginal characteristics.

It is evident, then, that if this physiological basis is sufficient for "retention", its relation to the corresponding psychokinetic intensity (already outlined) presents no fresh problem. The modus operandi is the same as for sensation.[10]

It should be observed here, however, that if the neural processes can be revived in this way, it would presumably follow that, since these processes like all physical processes are ultimately a form of psychokinesis, the psychokinetic processes themselves would possess a similar capacity of revivification under requisite conditions. In other words that "retention" might be psychokinetic as well as neural. The same, of course, would be true for association. Possibly both conditions may be essential.

The problem of "pastness"—or the conscious reference of images to previous experience—has given a great deal of trouble. We have already assumed, however, that a psychokinetic complex is

[10] There are so many difficulties in any physiological theory of memory that Bergson, in his well known "Matière et Mémoire", was led to discard such explanations altogether. The general view among psychologists, nevertheless, is that a satisfactory physico-chemical basis for retention will, one of these days, be discovered. For our purpose, therefore, it seems best to accept, uncritically, the prevailing opinion. For an excellent discussion of the possible physiological basis of retention see Warren, "Human Psychology, p. 437 ff.

aware not only of entities (psychons and their complexes), but of relations; and that the relations of which it is aware "get into" its awareness in connection with the entities with which these relations are essentially associated. Two distinct colors, for example, are perceived not only as colors, but also as *distinct*. The relation of dissimilarity comes in with them. But different colors perceived at the same time are usually, as well, spacially separate. In this case the separateness relation comes in also. The two periodicities do not travel in isolation, but carry their mutual interrelations with them. It is further evident, moreover, that two color periodicities need not occur at the same moment of time, but that one may precede the other, and that the change in psychokinetic intensity which is the cessation of a periodicity would be an awareness object as well as that change which is the incipience of periodicity. But an awareness of change implies an awareness of temporal sequence. And here, at any rate, change in awareness is awareness of change.

This awareness of pastness in general, therefore, is postulated in our original hypothesis. And the postulate would appear to be justified, if for no other reason, because empirically it is a fact that we are immediately aware of temporal sequence.

Specifically nevertheless the question may be asked how any given image can be taken to "refer"

to some definite past time, and how this past reference can be expressed in psychokinetic terms. The truth of this matter, however, would seem to be that such specific reference is not a question of pastness at all, but of association. The general condition of a relation to the temporal series attaches to all images, either as a whole, or to the imaginal elements of which they are the unitary complex. The specific character of that relation—the specific place in the temporal series which it implies—appears to depend altogether upon the character of the associated images revived with the principal image in any given case. My "memory" of the blue seen last Sunday is referred to "last Sunday", because the blue image is associated with the open field where I was reclining when I opened my eyes upon the cloudless sky, the Sunday atmosphere of too much breakfast, the distant church bells, and the rest of it. With more unfamiliar, remote, or less specific images, it is often quite impossible to "place" them definitely. All that exists is the general vague sense of pastness.

Psychokinetically, therefore, all that is necessary to posit is that the associated images should occur together synchronously. As to the relation to pastness in general, the relation of psychokinetic conditions to the time series is, as we have seen, fundamental. The further consideration of the aware-

ness of relations as such will be discussed more in detail later.

We have now considered—very briefly—from the standpoint of Activism, those psychic elements immediately derived from the world about us—sensation, feeling, and image, with its derivative, memory. There remains to be considered from the same standpoint the more complex psychic processes—attention, perception, thought, emotion, and will.

With the last four of these we are faced once more with the question of the compounding of consciousness.

Attention, however, does not raise this point. It is not a specific "state" like sensation or image, but involves merely the relative intensity of different psychokinetic conditions. It is the extent to which any given condition occupies the psychokinetic complex—"fills the mind" literally. The degree of attention existing in any such condition depends directly upon that element in intensity which we have called "exclusion", which in its turn, is the relative degree of amount, range, and duration.[11] Attention, then, is psychokinetic intensity—measured however, in the case of any specific con-

[11] The "clearness" which Titchener and others consider as the distinguishing attribute of attention, evidently depends upon these three intensive elements of amount, range, and duration.

tent, relatively to the total intensity of the whole complex, at that moment.

It is altogether an affair of intensive quantity.

This does not mean that several of such relatively absorbing intensities may not exist synchronously, or that the difference between them may not itself constitute a content of attentive awareness. For example, the thin high note of a violin E string may be perceived during a thunder clap, but the relative intensity of the contrast makes it audible. For relations, as activities, have their intensities also. Attention in itself, therefore, does not involve any "compounding".

Perception, however, obviously involves more than a simple element. That which is perceived must, in the first place, possess sufficient relative intensity to arouse attention. The amount of psychokinesis involved, as well as its duration and range—the extent to which associated processes are aroused—must be great enough to exclude other processes.[12]

In the case of sense perception, for example, the sensation must also be connected with the appropriate image in such a way that the image is part of the content. It is possible that the image might

[12] It is upon the intensive element of exclusion as a derivative of amount, range and duration, that depends what Wundt seems to mean by apperception—the "bringing of content into clear comprehension".

be a "generic" image, rather than a pure memory image. It seems wiser here, however, not to enter the recent discussion concerning imageless thought. In any event perception involves more elements than mere sensation. It involves at the very least, awareness of sensation, image, and the relation of likeness between them. It is, therefore, a complex awareness, a combination of different psychic elements, so that we have here, at any rate, a content which is "compound".[13]

For the activist, however, there is no reason whatever that such a combination of periodicities and the relations of similarity between them should not exist, nor that the complex which they form should not be essentially a unitary complex. In fact it is just this sort of thing that unitary complexes are; and the world is full of them both on and off the psychokinetic plane. That their constituent elements can be quantitively determined and stated in terms of psychokinetic intensity in no way impairs their unitary character.

[13] Many Psychologists as Warren (p. 234 ff., "Human Psychology", and Titchener, p. 364 ff., Textbook of Psychology), speak of *"simple perception"*—as the perception of a mass of colored points in a single field. This would seem to the author to be, rather, a "compound", or "summated" sensation, perception proper carrying with it always a relation of "difference from" or "likeness to" some other sensation, or (usually) some other image.

We have, so far, briefly analyzed only the simplest kind of sense perception, but the general application of the principle of the unitary complex holds good for more elaborate complexes as well. It is fundamentally a question of the quantity of the associated imagery—psychological meaning.

In regard to the more complex psychic processes, such as thought, it is exceedingly difficult to enter into any discussion of them without immediately becoming involved in psychological controversy. Yet without some definition a statement of these processes in psychokinetic terms is impossible. What for example, is the precise difference, psychologically, between a percept and concept? One has only to ask the question, and the immeasureable abysses of metaphysics at once fly open. Is a concept, psychologically, merely an image—a percept where the image perceived is that of a word, or a concrete thing, differing from other percepts only in its associative content—its meaning, or reference? Or is it something intrinsically different *sub specie qualitatis?* Is meaning, after all, something more, psychologically, than content? And a host of similar difficulties and questions.

Now whether the immediate object of awareness in conception is an image or not, it is obvious that the total psychological content is characterized by

conditions which differentiate it from the content in perception.

In the first place, the content in conception lacks the sense datum. There are in it, as essential elements, neither sensation, nor sense perception. It consists almost wholly of a more or less complex series of relations plus, usually, an image or series of images, the relational complex however being the important factor.[14]

The question for us here, therefore, is can these relational complexes which constitute the chief element in the content of a concept be described and differentiated quantitatively in terms of intensity?

Now the differences between specific relations would seem at first sight finally qualitative. There is, nevertheless, between them a difference in range. For the things, for example, which such a relation as "above" can characterize, are evidently more than the things to which such a relation as "tangent to" can refer. And in the end, too, this difference in range is intensively quantitative, since "above" can characterize more things—the entities of a three dimensional series, while "tangent to" can characterize the entities of the class "lines" only. For in general, relations differ in range, quantitatively, in

[14] For a concise discussion of "Imageless Thought" from the point of view of Physiological Psychology see Warren, "Human Psychology," p. 322 ff.

respect to the number of classes of entities to which they can apply. The social relations show this clearly—*e. g.* the relation of parenthood has a much greater range than the relation of teacher to pupil, and that of teacher to pupil has a much greater range than that of officer to soldier.

Universals, as well, differ in range within themselves. Goodness has a greater range than gentleness, or love than jealousy; since many are good who are not gentle, and many more love than are jealous.

Furthermore, since, as a rule if not always, the awareness content in the case of universals and abstract particulars includes a symbolic image, sensory or otherwise, the total content will vary intensively with the different images appropriate to the universals, or abstract particulars, with which they are associated.

Thought, however, involves more than mere content. It involves process also. Nevertheless, this fact presents no special difficulty, since *ex hypothesi* a psychokinetic complex is aware of its own intensive changes; and, since the thought psychosis can be expressed in terms of psychokinetic intensity, it follows that the changes of that psychosis can be expressed intensively also. As process the thought process consists, like other psychokinetic processes, in a series of intensive changes.

As a process, however, it differs from other processes in being obviously much more complex. It involves, essentially, a number of subsidiary processes. It involves the awareness of concepts, frequently, at any rate, of images, and of different and usually progressive series of relational complexes. It involves also, as a rule, feeling—the awareness of gratification or the opposite during the process. It possesses, therefore, both greater amount and greater range. Between thought processes themselves, however, their intensive differentiæ are principally those of range, due to the specific nature of the various contents which the process relates or generates. And, finally, of course, thought always involves meaning, and meaning is content logically determined.[15]

There is, strictly speaking, no specifically constant content in emotion. Like feeling it is altogether process. It differs from feeling, however, in being characterized intensively by both greater amount and greater range. It involves thought and image as well as perception and organic sensation. All these elements, nevertheless, may exist in a complex without emotion. It is only when the total aware-

[15] That universals—whatever they may really be—are empirically essential to the thought process, as part of the psychological content, seems incontrovertible. For we cannot, after all, think without thinking—*i. e.*, conceiving—be the nature of the process what it may.

ness process related to such a complex content is strongly rhythmic or arhythmic in character that an emotion may be said to occur. To be afraid means to perceive an object, to think of its dangerous nature, to have unpleasant bodily sensations, and, therefore, to be aware of a series of intensive changes out of harmony with the totality of normal processes in the psychokinetic complex as a whole—to be aware of a general arhythmic condition in the total awareness. Emotion is therefore psychokinetically more intense, although at the same time vaguer and less specifically precise than feeling. But like feeling, such a rhythmic condition may characterize any process. It needs only to be sufficiently pronounced to become a distinct element of awareness. So, for any "psychic state" we may have not only a "feeling tone," but also an "emotional coloring".

The differences between emotions may be expressed in intensive terms in the same way as the differences between feelings, with certain modifications due to their greater complexity. Thus, fear and anger may be equally unpleasant—equally arhythmic. But in fear the lack of rhythm qualifies one set of psychic processes, in anger another. The content of the elements whose psychokinetic changes are involved differs in the two cases. The thought processes are not alike, nor the associated bodily

sensations; so that the two psychoses differ intensively, as complexes, with the intensive difference of these associated elements.

The same general considerations also hold good of the emotions characterized by an increased ryhthmic glow—greater harmony in the total activity of the psychokinetic complex. Love and joy, for example, may be equally in ryhthmic harmony with the psychokinetic processes as a whole, but neither the thought processes nor the associated bodily sensations are the same in both instances. They differ in range, amount, or, under certain conditions, in both of these.

The ancient problem of will and activity—whether, that is, the will is dynamically efficient, or merely an inefficient psychic correlate of physicochemical processes—does not exist for the activist, since, as for him all processes, psychic or otherwise, are activities, will is an activity also. It is not, however, in any sense a "faculty" in the antique psychological terminology.

Will is a process which characterizes the psychokinetic complex as a whole, a certain content (subcomplex), and the whole-part relation between them. The essential characteristics of will, therefore, are due to this relation of the specific content to the content included in the total process.

This specific content is usually called purpose. Its principal element is a complex image which is anticipatory—that is, an image which is in relation to the forward stretching part of the time series; and which is characterized by a desirable feeling tone—"desirable" meaning, here, desirable as a whole and in the long run. In other words, the image in this case possesses a complex of periodicities and a range in harmony with the range and periodicities of the psychokinetic complex as a whole. The image also must endure, or be capable of revival in all essential elements under varying psychokinetic conditions, until it is merged in the actual experience—must possess, in a high degree, duration.

The will process, then, is characterized intensively by a maximum amount and exclusion—it occupies the whole complex, the whole "field of attention"; while its imaginal content is characterized by a high degree of range and duration. It is differentiated intensively, moreover, from other psychoses by the nature of the image which is the essential element of its content; the "purpose" image, alone, possessing both the relation to the forward stretching part of time series, and the specific feeling tone which have been noted.

For example, a situation which is merely desired but not willed, involves also an anticipatory image

and a pleasant feeling tone. But in that case the feeling is either only pleasant in itself, or harmoniously related to a part only of the total psychokinetic complex; its range does not include the greater part of the complex as does the feeling tone of the will content. Or again, the feeling tone attached to the anticipatory image may be unpleasant in itself, but taken in its wider relations to the total complex it may be, nevertheless, desirable. I may not wish to go to a dentist, but I may will to go there. Psychokinetically the difference is clear and can be measured intensively.

Well! We have considered briefly, the chief conscious processes, and found that they can all be stated in psychokinetic terms and "measured" intensively.[16]

From the standpoint of Activism, at any rate, their "qualities" and differences do not seem to be irreducible elements, except in so far as they involve differential combinations of the elements of intensity

[16] This, of course, does not imply that "content" can be wholly stated in psychokinetic terms, since the relations involved are not psychokinetic, but beings of a different plane. The conditions involved in the *awareness* of relations, however,—the conditions of their inclusion in the psychokinetic complex which is aware of them—*can* be stated in terms of psychokinetic intensity. A relation *is not* a complex of psychons. But the awareness of a relation *is* a complex of psychons, at the particular intensity which that relation determines.

itself. And this we have found to be true even in the awareness of such things as ideals, relations, and values, since they also can be distinguished intensively.

"Consciousness", then, is simply the generic term for the total activities of a unitary psychokinetic complex of a certain kind—of a certain interrelated complexity and intensity,—just as "electricity" is a generic term for the total activities of unitary psychokinetic complexes of certain other kinds—of certain other interrelated complexities and intensities.

CHAPTER 8

THE META-PSYCHIC PLANE.

THIS is the plane of ideal entities—numerical series, logical propositions, universals, ethical values, and the like—beloved of Neo-realists and mathematicians; the plane, especially too, of relations "as such".

We have already referred to these beings not infrequently and concluded that, whatever else they might or might not be, they were at any rate efficiencies—Activities in our sense of that term. They all are things which "make a difference" somewhere, as well as things by "reason of which change exists".

All of them, also, can be measured intensively by applying the three dimensional rule of amount, range, and persistence. The relation "above", for example, may be "nowhen and nowhere", but nevertheless its intensity can be determined. It can be intensively differentiated from such a relation as "separate from", for its range is less, being restricted to spacial position, whereas "separate from" applies, as well, to the time series, and even to things outside of time and space altogether. Or again, the relation "brother of" has much less intensity—is much more restricted in range—than such a relation as "ancestor of". For evidently "brother of" can make a difference to but a limited

number of persons or situations, while "ancestor of" is an organizing relation for the whole human race as well as for the animal world generally.

Certain of these ideal entities, also, would seem to be universals and relations some or all of the terms essential for whose activity exist only upon the planes below. Electricity—the universal—for instance, would be inefficient without its units, the electrons, which are entities of the physical plane. Nor could the relation "above", in its usual connotation, possess any intensive range without a material mass, distance from whose center of gravity constitutes "aboveness".

The universals and particular entities of mathematics on the other hand—series, for example, as a universal; or the numbers of which any particular series is composed—seem to exist independently of the lower plane activities.

Again, such a relation as "distance", not from a material mass as in "aboveness" but in general, is a purely spacial relation between points, and neither space nor points depend upon anything beneath the meta-psychic plane.[1]

Some "subsistents", therefore,—certain ideal entities, relations, and relational complexes—would appear to exist independently of the lower planes,

[1] If there is, also, a "logical distance" (Russell—Principles of Mathematics), the elements of such a "distance" would, clearly, be all meta-psychic.

and to possess on the whole greater range and intensity. For the efficiency of others the lower plane activities seem to be essential conditions.

Now this whole problem, although so recently brought to the fore in philosophic discussion, has existed, as we all know, since Plato. For Activism, however, these difficulties appear, to some extent at any rate, in a modified and more simple form.

In the first place, since for it all the entities of the lower plane, organic or artificial, are ultimately complexes of one sort of entity—of psychons—the concrete particulars of any universal are necessarily always such psychokinetic complexes; the distinctive difference between them depending altogether upon the nature of the relations involved. And, since all relations and relational complexes exist, or "subsist" upon the meta-psychic plane, the relations not only between ideal entities but the relations which characterize the lower plane entities—namely, psychons and their complexes—are to be found there also. In other words, "psychon", the universal, not otherwise than all other universals, has its home on this plane.

The psychon however is peculiar in that, as an awareness unit, it is not necessarily conditioned by space or time, for an awareness may be altogether of meta-psychic activities—universals, relations, or ideal entities. The range of its intensity may be

exclusively a meta-psychic range. Ideals or relations, as well as past or future events and distant objects, may compose at any moment almost its entire content. It may justly be considered, therefore, to be at home on the meta-psychic plane no less than on its own. The difference being that upon its own, or any of the lower planes, *all* complexes are fundamentally psychokinetic, while upon the meta-psychic plane there are many entities which are presumably not psychokinetic.

These other meta-psychic activities, however, so long as they remain upon their own plane, are inefficient in respect to the existential world. They are out of relation to concrete particulars. To achieve this efficiency upon the lower planes, to enter into relations with concrete particulars, they must depend upon psychokinesis. For psychokinesis is the only activity among them which can "descend" into the planes below. Without it, therefore, there would not be any existential world as we actually find it at all. Such a spacial relation as "distance," for example, might well exist if there were nothing but empty space, but it would possess no effectiveness upon the lower planes. Its intensity would be slight, its range restricted, without some sort of existential world in which its activity could be manifested, and in which, through psychokinesis, it could become involved.

Because we are immediately aware of such meta-psychic activities through psychokinetic "inclusion", however, has led to the common error that they are themselves "mental" in nature. Yet we are immediately aware of the activities of the existential world in no other way, and no one but the subjective idealist doubts their objective validity. For Activism, therefore, there is no question about the "objectivity" of relations. As awareness content they are psychokinetically included, but as facts on their own plane they are not only objective, but apparently extra-mental altogether. In this sense, at any rate, Activism is realistic.

There remain of course many problems as to the classification of meta-psychic activities, but in so brief an essay these problems could not be even adequately summarized. That there is a differential stratification among these entities also, is to be presumed from our discussion of the classification of relations. There are, obviously, wide intensive distinctions between them, as we have also noted.

In regard to the possibility of there being some ultimate unit activity upon the meta-psychic plane, it would appear that so far-reaching a discrimination must lie outside of our present power, if, indeed, such an analysis is by any means possible at all. It would seem for the present that we must take numbers, points, moments, and psychons to be

ultimate entities; while the relations of likeness, difference, direction (temporal as well as spacial), and precedence would seem to be fundamental.

Whether or not there is, in addition, such an ultimate as logical change is a still further question. For the purpose of this essay, however, it is hardly essential to pursue a rigorous analysis so far.

There remains the further inquiry whether or not they may be some still more fundamental plane of activity of which even the meta-psychic activities are, in a sense, derivatives; and whether, if such be the case, some form of psychokinesis may not penetrate even beyond so remote a boundary also. The Eastern thought, as we know, has, for ages, maintained the actuality of such transcendental regions, and that their activities may be truly apprehended in "sammadhi", or the supernormal mystic experience.

These lofty mountain peaks, nevertheless, lie quite beyond our ordinary vision, although it were an unwise man who should presume to assert dogmatically that the glimmer of their eternal snows may not, from time to time, light up for some brief moment our normally circumscribed horizon. However all this may be, for the activist at any rate meta-psychic beings, whatever their exact status, in so far as they can be at all, are activities, and as such capable of intensive differentiation.

CHAPTER 9

ACTIVISM AND THE HISTORIC PROBLEMS OF PHILOSOPHY

It is evident that, for the activist, many of the historic philosophic problems will take on a different complexion from their long accustomed hue. Some of them, from his point of view, will be lengthened or foreshortened, and some of them will cease to exist altogether.

In so brief an essay, however, intended in great measure to be suggestive merely, there can be no pretense of even an adequate survey, much less an exhaustive analysis, of the many questions which have monopolized the attention of philosophy at different times during its long history. To indicate certain aspects upon which the activistic attitude may have some special bearing is all that can be attempted here.

Among the traditional problems the first, and perhaps the most ancient, bequeathed to us moderns already worn and dusty—yet with something of the glamour still about it of the sunlit temples of Egypt, and India, and Greece,—is that of the "One and the Many."

The problem has taken many different forms. With Plato and Aristotle, it was the problem of universals and particulars. With Spinoza, it was

the problem of substance and attributes. With Hegel, it was the problem of system—of how a relation relates.

It is difficult, however, to fasten fairly either of the catchwords "monist" or "pluralist" upon the activist. Since for him every conceivable thing is an activitity of some sort—since activity is the universal in which all entities participate—he may be labeled "monist", especially as the attempt is seriously made to discriminate between activities in quantitative terms of activity itself. On the other hand there would seem to be for him certain irreducible differentiæ between activities due, paradoxically enough, to the fact of their being activities at all.

For there seems to a good deal of inherent vagueness in our ideas of unity. Anything can be "one" in so many different ways. A unitary complex, for example, is "one" in its relations to other similar entities on its own plane. Yet it is "many" in its relation to the entities of the plane above. Relations, again, and their complexes seem fundamentally disparate—as difference, identity, or the temporal and spatial relations. Even quantitative differences are *different,* although, it may be, involving units of the same kind. One and one are two, and one and one and one are three; but two and three are forever and essentially separate.

The world, as we can ever apprehend it, then, seems to be always many, although it would appear to be likewise one—one, as activity, the universal; many, as particular activities intensively distinct.

Whether the universe as a whole is, in some transcendental fashion, a unitary complex also, seems in the end to be largely a matter of philosophic taste. If it gives any deep satisfaction to believe so, there exists no conclusive evidence to the contrary. Activism, as such, has nothing to exact about this matter. For Activism the world is "one" as activity, only as for Physical Science it is "one" as a manifestation of energy.

In regard to the more concrete problem of Cosmology, Activism, as we have seen, has something quite definite to say. A cosmos, whether essentially a universe or a "pluriverse", whether fundamentally one or many (and isn't it from the very nature of the case necessarily both?) presents at any rate a number of different questions. As full of many problems it is pluralistic, however monistic the solution of them may be. For Monism, of course, does not deny the "many", but only the character of the many as ultimately discrete. It insists that all things must be essentially of the same kind (as, for example, "spirits"), and finally comprised, in some

way, in an embracing unity (as an absolute Spirit or Self).

Now evidently Activism is not monistic in this sense. The cosmological problem, for Activism, is not "in what way are all activities one"; but rather, "in what way are activities many—how can they be differentiated as activities in terms of intensity and its elements"? Its principal aim is empirical distinction. Things for it are all of a kind *because* they can all be distinguished according to one formula. Their oneness grows out of their manyness. For although it considers everything to be activity, activities are intensively discriminate—"That by reason of which change exists" may be mystically,—and perhaps really—one, but the changes which exist thereby are evidently many.

Of course, however, it is not intended here to indicate any contrast between "appearance" and "reality." Activities are entirely real on whatever plane they may occur. Like the stars they differ from one another in glory, but not in being. The activist is therefore a realist rather than an idealist, yet, in a way, an idealist also, in that he holds that awareness—psychokinesis—is the stuff of which the existential part of the world is made. He has moreover, as we have seen, a pretty definite hypothesis as to what this psychokinesis is, and how it is organized to form the basic units of the dif-

ferent existential planes. Yet, since the whole essay, so far, has been concerned with just these questions as to the essential structure of the universe, it is unnecessary to discuss them further here. How far Activism may have solved them, at least to its own satisfaction, is for him who runs to read.

Specifically, however, there are many questions into which the Activist hypothesis cuts deeply—as for example the Mind-Body problem. Granting the activist hypothesis, this problem does not present the difficulties with which it bristles upon other theories. It is almost entirely a problem of non-additive, and possibly non-causal, relations—the relations between the unitary complexes of the different planes. For if psychons are the basic units of the physical world, legitimate questions can be concerned only with differences between awarenesses, not with a difference between awareness and some other existential entity.

The mind-body problem, therefore, reduces itself to the question—what are the relations between the specific psychokinetic unitary complex called body and the specific psychokinetic complex called mind? Are they essentially different from the relations found between other sorts of psychokinetic complexes, or are they merely a special instance of the

interrelationship of psychokinetic complexes in general?

Obviously for the activist the last description is the correct one. Whatever is peculiar to the mind-body relation is due merely to the special character of the complexes involved.

For Activism, then, the mind-body problem is the specific problem concerning the nature of the relations between the two psychokinetic complexes which constitute, respectively, the body and the mind. What some of these relations might be has been indicated in the chapter on Consciousness.

There remain, however, the questions—are the body and the mind quantitatively (in amount) identical; are they entirely separate psychokinetic complexes merely interrelated; or does the body, in some way, and if so in what way, include the mind as a subcomplex, or vice versa?

Now as far as the characteristic doctrines of Activism are concerned any one of these various conditions might be true. As a complex of psychons the body might be characterized by a double order, the order of atoms, molecules, cells, and the rest of the physical organic structure; as well as a purely psychokinetic order not imbedded in the physical order.

Or possibly this double order might characterize only a part of the physical organism, the nervous system, brain, or cerebral cortex.

On the other hand that complex of psychons which we call mind might be altogether disparate from the physical organism with which it is related; the relations between the two being possibly causal, or merely correlations—relations of non-causal efficiency. There is, also, a further possibility—namely that the mind is neither quantitatively identical with the whole physical body or any part of it, nor yet altogether separate from it, but that, on the contrary, the physical body, either as a whole or in part, is a sub-complex included in the larger complex of an individual mind.

No one of these possible relationships, however, would seem to follow as a necessary deduction from the postulates of Activism. On the contrary, any one of them might prove to be the actual mind-body relation. We do not know whether it will ever be possible to solve this problem by experimental evidence or the discovery of new facts; but, whether practically capable of solution or not, the problem is, for Activism at any rate, an empirical problem. The Activist hypothesis does not in any way depend upon its solution. It has a place for the facts whatever they may be.

This much however can be said. The essential relations between body and mind must be, in any event, organizing relations. And this would be equally true whether the mind is organized by, or through, the body; the body by, or through, the mind; or whether each is partially, but not wholly, organized by the other.

Concretely this is evident in such a case as that of pain. If pain is always superinduced by a physical lesion, the body would be always the medium through which the psychic pain situation were organized. If, on the contrary, pain could be superinduced without physical lesion, if the thalamic pain centers in the body could function as the result of a purely mental stimulus (as for example a "telepathic" suggestion), the mind would be the medium. In either case, however, the relations involved would be organizing relations. But beyond this it would seem impossible in our present state of knowledge to proceed.

The mind-body situation, irrespective of the solution of the problems involved in it, has nevertheless an immediate bearing upon the question as to why a psychokinetic complex, A, is aware of another complex C, or of a certain relation, X, rather than of complexes D, E, and F, or of relations W, Y, and Z.

But to this problem, also, the answer is an empirical answer. For, as a familiar fact of experi-

ence, we find minds, whatever their real nature, related to bodies, whatever the relations between them may be, in such a way that sense data evidently, and all other awareness data presumably, "get into" the mind through the medium of bodily stimuli.

Clearly, therefore, what the psychokinetic complex "mind" is aware of is conditioned by the stimuli that the body to which it is related receives. Similarly the psychokinetic complex which is electron A is aware of electron B, and not electrons C, D, or E, when changes in A's motion are caused by B. The respective modus operandi in the two cases has been examined at some length in Chapter 7 and Chapter 6. In either case the situation which conditions the physical unitary complex is the selective agent.

The Epistomological problem, in some form, has been at the fore in philosophical discussion for the past century and a half.

It has taken on this character of a fundamentally important problem because no philosopher can pretend to consider the ultimate nature of objects in general without, either explicitly or tacitly, assuming some position in regard to the character of the relationship between himself and the objects which he has under consideration—*e. g.* the relation between the knower and the object known.

It is evident, moreover, that the conditions involved in this relation between knower and object known is a special case of the essential conditions involved in the relationship of any objects or terms. What, then, is implied in the relational situation? Is the character or existence of terms dependent, *ipso facto,* upon the character or existence of the relations which obtain between them? Or are neither the character nor existence of terms in relation necessarily dependent upon the fact of their relationship? This is the question in a nut-shell.

Briefly, there are three types of solution to this problem. The eighteenth century thinkers—Locke, Berkeley, Hume, Kant—who were inclined to consider all relations as essentially causal in character—held that related objects were necessarily conditioned by the relations which obtained between them. Particularly was it urged that all objects which could be perceived by the senses, since their entire existence *as sense objects* depended upon the relation between object and perceiver, were from the very nature of the situation altogether dependent upon the awareness relation—that their *esse* was *percipi.* For the earlier Subjective Idealism, therefore, consciousness was constitutive.

The second type of solution is that offered by Objective Idealism exemplified in such philosophers as Fichte, Hegel, Caird, Bradley, Royce. This later

Idealism still holds that terms in relation are, in consequence of that fact, different from what they would be were the relation not there. It still holds, also, that the awareness relation is essentially constitutive. To get away from the obvious difficulties and limitations of a purely Subjective Idealism, however, it posits a universal or absolute consciousness, in which are contained ("as appearances", or at any rate, subordinate realities) both terms and relations. For it, therefore, consciousness is still constitutive, but the world is "objective" to the merely private perceiver because the constituting is done by an Absolute Being to whose universal awareness is due the existence of all objects and finite perceivers.[1]

The third type of solution is advanced by the Realists, and in its latest, most logical form by the New Realists. Needless to say, also, this is the view generally held by the scientists and the unphilosophical portion of humanity. This view was definitely, although briefly, stated to be the view held by Activism, as an essentially realistic system (Chapter I). In order to justify the faith that is in us, however, it is well to state the matter here somewhat more in detail.

[1] See Royce "The World and the Individual". Vol. I. Lecture III ff.

If we call two objects, or terms, A and B, and the relation between them R; Activism holds (1) that R *does not necessarily* make any difference to A or B, except the mere fact of relationship; (2) that R, however, *does make* a difference to the complex A-R-B, since, although not constitutive of A or B, it is constitutive of the complex; and (3) that although R, as such, does not *necessarily* make any difference to A or B, it *may* make a difference, if in any situation it is logically prior to other relational conditions in the situation by which the situation, as a whole, makes a difference to the objects included in it.

Thus (1) if A and B are friends, that fact does not make a difference to A and B as objects. They are just as much animals, or men, or citizens, whether they are friends or not. The relation here is constitutive of friendship only. Otherwise the objects which it relates are quite independent. (2) The relation of friendship, however, does make a difference to A and B as a complex of two friends acting, in any way, in common. (3) But the friendship relation *may* make a vital difference to A or B, or both, since A and B might be in some situation where the safety, or even the existence, of one or both, might depend upon the fact of their friendship.

Again, (1) time and space, as manifolds of moments and points, are mutually independent, whether or not the relational complex of physical motion obtains between them or not.[2] On the other hand, (2) motion is altogether dependent upon its relations to points and moments, or a complex dependent upon its organizing relations; or such a term as a child dependent upon the relations—"ancestor of" and organic "similarity". (3) Cases of partial independence are acceleration and motion, the existence of acceleration depending upon the relational complex of motion but not vice versa; or brotherhood, when not only the existence of A and B as brothers, but also their existence as physical organisms at all are dependent upon their relationship to a common ancestor.[3]

There is, thus, a logical hierarchy of relations; in general the logically prior relations being constitutive, and the logically subsequent relations not constitutive.

Now the "awareness relation" is for the Activist, *ex hypothesi,* a relation of psychokinetic inclusion.

[2] According to the new Relational Physics this would be true in a limited mechanical sense only, the three dimensions of space, and time, being considered as a single four-dimensional manifold. See appendix.

[3] For a discussion of independence, and the independence test see Huntington's "Continuum," or Young's "Concept of Algebra and Geometry."

It may, therefore, be present or not in any given case. *Ipso facto,* it is constitutive only of the fact of inclusion, although it *may* make a difference to the terms which it relates in certain situations, just as may any other relation. Since however relations are activities, any relation always makes a difference *somewhere,* although it does not make a difference *everywhere. Where* it makes a difference, and the sort of difference it makes depends upon its intensity, especially the intensive element of range.

But the relation of psychokinetic inclusion is not a relation of fixed intensity. Its intensity depends primarily upon the including psychokinetic complex. For an awareness, from the activist's point of view, is not a relation but an entity. Awareness, then, is ubiquitous, not because the "awareness relation" is characteristic of all experience, but because all existential entities are psychons, or psychokinetic complexes. The existence of the psychon as an independent entity does not depend upon the "awareness relation" between some other entity and it—its inclusion by some other psychokinetic complex. Its existence depends, rather, upon the fact that it is an awareness unit itself.

It is not "constituted" by an "awareness relation" any more than an electron is "constituted" by an "electrical relation". Nor are psychokinetic complexes necessarily constituted by being included

in other psychokinetic complexes—by becoming awareness objects.

Activism maintains, therefore, that neither entities, nor relations "out there", are in any way determined as to their existence by being thus included in the awareness complex which perceives them; since they, also, are independent activities in their own right. For psychokinetic inclusion is constitutive of the perceiving only, not of the perceiver, nor of the object perceived.

Activism maintains, also, as we have seen, that objects do not, somehow, have to be "gotten over" into consciousness. As fundamentally awareness complexes they are already there.

But this does not answer the obvious question how does awareness complex A "get into" awareness complex B as part of awareness B's content? Yet, here again, an attempt at a solution has been made. The specific periodicity which is "blue" is both in the "object" out there, and in my "mind" which is here. The "aboveness" in a complex of objects, out there, is also present, "internally", as a relation, in the perceiving psychokinetic complex. Literally, therefore, in perception, things are both out there, and in my mind also, as content. All this has been discussed, at some length, in the chapter on Consciousness.

In the chapter on Consciousness, also, it was pointed out how relations, relational complexes, and ideals, once "inside", are known; and how content can be expressed in terms of psychokinetic intensity. In the case of sense perception, moreover, it was indicated specifically how the spatial relations "got in".

Here, then, it may be said that relations in general get in no otherwise. They come in with the entities which are their terms. Where, for example, blue and red come in together, the same relation between their respective periodicities is then inside as well as outside. And that relation of difference, since it also has a certain intensity of its own, can exist, *qua* intensity, as an awareness datum —be tagged with a verbal image, and considered separately as a content object. Being of the same intensity as the difference outside, that difference is always just that difference whether inside or out. It can thus be hitched up with any appropriate terms, or be an object of awareness in itself, without any specific terms at all. Relations, then, "come in" with their terms, and once in, can become separate awareness objects.

The same is true of ideal entities. They get in with concrete particulars—sense data. A geometric triangle gets in, in the first place, as a concrete triangle drawn on paper—certain intensities of color,

size, and form. Once in, the spacial-relation complex alone, without the color and size, can remain as a separate awareness datum by reason of its own specific intensity just as any other relation or relational complex can. The fact that such an ideal entity is not "out there" in the material world, but is "out there" on the ideal plane makes no difference. As an activity with a certain characteristic intensity it *is* just the same. But to "get it in" you have, literally, first to get it into your head, then in your mind—which shows again the accuracy and felicity of common sense description.

"Subsistents" in general, then, can be gotten into the psychokinetic complex without any great difficulty. They are obliged, however, to ride in upon the backs of concrete particulars—to be smuggled in with the sense objects with which, at the moment, they may be associated.

In regard to the problem of *a priori* knowledge, Activism, as such, may be considered to throw no especial illumination, excepting, in so far as fundamentally realistic, it holds that whatever "gets into" the awareness complex is necessarily just what it is. The awareness object that is apprehended is the same whether inside or out. And, of course, this is just as true of the awareness of meta-psychic entities or relations as of the immediate objects of sense perception. Meta-psychic entities are perceived "as

such". The "aprioriness" lies in the nature of the awareness object, not in the awareness of it. It is logical, or cosmological, not psychical. If that object is, for example, a simple relation (as difference); or a simple sensation (as blue); it seems evident that, if it is perceived at all, it must be perceived as just what it is and nothing else.

Possibly for the activist, the terms "immediate" and "derivative" would fit the facts better than "*a priori*" and "experimental". For, in a way, the only kind of knowledge that is possible at all, for him, is *a priori*—the ambiguity lies wholly in the object. For example, suppose x to be above y. Now, either, x and y are of such a sort that x always is above y, in which case they can "get into" awareness in no other way; or x may, or may not, be above y, according to circumstances, in which case they must "get in" with the circumstances attached. In either event x and y and the relation "above", or its absence, must get in as they really are, and in neither event is there any awareness of them until they "get in".

In both events the "knowledge" is *a priori* and experiential—*a priori* in the sense that the entities and relations in question are just what they are perceived to be, experiential as to whether they are always, or otherwise, the same as they are "known" in any particular presentation.

When anything, whether simple or complex, in or out of awareness, is of such a kind as to be always and everywhere the same, as *e. g.,* the relation "above", the knowledge of it may be said to be immediate or *a priori,* if not, derivative or experiential. There can be no question, therefore, for the activist as to the validity of presentative knowledge, since from the very nature of the case the same "things" are both inside and outside. If psychon A is aware of psychon B, it is, literally, B which is psychokinetically included in A. If complex X is aware of periodicity (relational complex) Z it is, literally, Z that is included.[4]

But if this is so, what shall the activist say about the question of Error?

[4] Due to the peculiar doctrine of Activism that knowledge is essentially psychokinetic inclusion, this whole question assumes a somewhat unfamiliar form.

Certain fundamental relations—as likeness, difference, and the like—are necessarily involved in any highly organized psychokinetic complex.

Such fundamental relations, therefore, are prerequisite to any activity—such *e. g.* as discriminative perception—on the part of that complex.

They do not, however, need to be "transcendentally deduced" like the Kantian Categories; for, as organizing relations, they are imbedded in the very inception of the complex itself.

In this sense, but in this sense only, are such "forms of thought" *a priori.*

The problem is so intricate and full of difficulties that only the briefest survey can be attempted. It may be said, nevertheless, that in the main the position of Activism would be here also, a realistic position.

There are, however, two separate problems contained in this general question which philosophers, not infrequently, have failed to distinguish with sufficient clearness. One is the problem of truth and falsehood, the other the problem, strictly speaking, of error.

Now since Activism not only holds, with Realism, that all facts involve or imply propositions, but also holds, in addition, that propositions themselves are efficient activities; it follows that not only facts, but the propositions which are implicated in those facts, are "objective" beings, which may subsist without being "thought of"—without inclusion in an awareness complex.

But it is evident that there are false as well as true propositions—a false proposition being a proposition in which the relation between its terms is a relation which is contradictory to the relation by which those terms are constituted members of the class to which they belong.

Thus $2 <$ (is less than) 5 is a true proposition, as well as an actual fact. But $2 >$ (is greater than) 5 is a false proposition, because it contradicts the

relation by which the series of cardinal numbers is constituted—namely the fact that in such a serial order the preceding number (2) is always less than any succeeding numbers (as 5). It is false for that system upon which its specific organization depends. For although there might be conceivably a system in which $2 > 5$ was true, that system would not be the system of numbers as we know it.

Yet here both the terms and the relation are "true" enough, the falsehood lies in the total relational situation. The Activist maintains, however, that such false propositions not only are, but are activities which may be of great and pernicious intensity. Certainly common experience is full enough of examples of the efficiency of falsehoods. The fact that a falsehood is "unreal", possesses no status in the existential world, is beside the point; for metapsychic beings generally are not existential, yet are none the less efficient activities. For Activism, therefore, as for Realism, "false" and "true" are objective characteristics.

In contradistinction to "false", however, error involves the element of awareness. A false proposition, as well as a true fact, might be, without having been discovered. But it is difficult to see how a mistake can occur without implying a mistaker. The "error" arises when a false proposition as an independent awareness object is included in a psycho-

kinetic complex.[5] False and true apply to facts irrespective of an awareness of them. Error is always error of judgment. It depends upon the way in which facts are "taken".

We have spoken of "things" being, at once, both outside and inside the psychokinetic complex—as "objective" data and conscious content. It is evident, however, that any specific thing—something, for example, undiscovered by any other awareness—might be altogether outside of any other psychokinetic complex.

It is also true that any specific thing may be inside a given complex as a sub-complex, as the specific intensity which that particular thing is, without being at the moment anywhere else. Images are familiar cases in point, notably dream images. The difference, however, is between the relative intensities of that which is inside only, and that which is outside as well.

A man whom we see in a dream is a man, but he is only a man as we see him. The "real" man has a whole host of activities inside *him* which we do not see, but only infer; whereas the dream man, presumably, does not possess any of these invisible

[5] Of course a false proposition may be included as a part of a true proposition—be recognized as false, as in the proposition "$2 > 5$ is false". This false proposition, however, would not be an independent object but merely an element in the containing proposition.

activities at all. We see all that there is of him. He is a mere shell of a man, but a man for all that. He can walk, and act, and even talk, but the stuff in him is not his own. It does not inhere in his own psychokinetic complex. It is pumped into him from the stores of the dreamer's complex. If the dream is vivid enough, however, he is just the same sort of man that we see walking along the street in broad daylight—the same sort of intensive complex of periodicities and space relations exists in the perceiver in the one case as in the other. Yet in the one case that which has given rise to his existence is an internal stimulus, in the other case an external stimulus.[6] The illusion consists altogether in the further inferences—the allied associational content—which we make in regard to this particular man. Because we can see him we judge, from long habit, that he can think, push us, argue with us, and what not—that he possesses his own independent inside, when as a fact he does not possess any inside at all. He is all outside. His *esse* is all *percipi*.[7]

And, of course, we become aware of this at once as

[6] How the dream image arises is largely a matter for the physiological psychologist to explain—if he can. Its genesis is irrelevant for us here.

[7] This, of course, would not be true of objects perceived in "veridical" dreams, if such dreams should prove to be facts.

soon as he turns into an elephant, or does some other impossible thing which fails to fit in with the familiar associative content.

Error, therefore, is always a question of meaning—of psychological content. It is a relational affair altogether. If the same relations exist between the entities in the total content as exist bebetween the same entities outside of the content the content is "true". If they do not, there is error.

If a dream man could possess all the relations to his environment which a man outside possesses—all the activities, including, of course, permanence—then that dream man would be just as real a man in every conceivable sense. That he does not possess these multifarious qualities is just what constitutes him a dream man only. The snake which the alcoholic patient sees is a snake. It is not "real" because it can neither bite nor lay eggs, does not possess a real snake's manifold capacities; not merely because no one else can see it. If a certain kind of clairvoyance were true, another person possessed of this power *could* see it also. Here again it is all a matter of associated content. The poor sufferer sees a snake and therefore concludes that it is "real"—exists outside as well as inside of his own psychokinetic complex. Here, at any rate, as Emerson said "Truth is the conformity of *thought* with things". The "thing" that is seen in hallucination is exactly

similar to the "thing" seen normally. What is thought about it makes all the difference.

Error, then, is always in some way error of judgment, and it occurs when the relational complex associated in content with any awareness object is not the same as the relational complex associated with that object without, as well as within, that particular awareness center.

Yet none of this, it may be well urged, meets the philosophic question—what after all *is* Awareness?

For Activism, of course, it is an activity, and we have attempted to show how to it, also, the general determinations of intensity may be applied. We have furthermore defined its fundamental units, the psychons, as entities, and therefore any specific awarenesses which take place in actual experience as an entity-relation complex.

But what sort of an activity is a psychon, and how does it, or its complexes, differ from other activities? Briefly, Activism would answer the question in this way. *Awareness is an activity to which nothing except that which is included within itself can make any difference.* And not only is this true, but it is true of *awareness only.* It marks it off definitely from activities of any other kind.

It is obviously not true of any plane below the psychokinetic plane, for although here too any uni-

tary complex, such as a physical organism or material object, may have a difference made to it by the presence or absence of activities within it, a difference can be also made by many sorts of activity altogether outside of its periphery.

It is equally not true of the meta-psychic plane, for such things as relations, universals, ideals, or mathematical series are, presumably, just what they are once for all. There, one may have different relations, ideal entity complexes, and the rest of it, but they cannot be changed by including in them additional factors. They are supposed to exist above the world of change altogether. They are activities because by reason of them changes take place, but they themselves are changeless.

Awareness, then, is *sui generis* in this respect. Nothing can change it except that which it includes. There may be many sorts of activity which can determine the conditions of inclusion, but the awareness itself is unaffected until that inclusion occurs. Or, again, the relations of an awareness complex to the rest of the world outside may be various and many, but the *one essential relation* to any external activity by which that activity becomes an awareness object is inclusion within the complex itself. How this may be so has already been pointed out in the chapter on Consciousness.

But, it may be asked, even supposing any of these external activities to be thus gotten inside of the awareness complex, are they not then, also, still *objects* of awareness as psychic content, and does not the subject-object relation still obtain as a special kind of relation different from all others?

The answer to this objection is that what we usually designate as the subject-object relation is really, in the case of awareness, nothing but the whole-part relation. *Ex hypothesi,* for the activist, an awareness complex is aware of its own intensive condition and changes; but, in this case, awareness of condition or change is itself change or condition of awareness. There is no special change-object relation between change, *an sich,* and the object in which change occurs. The relation here is between the object and the time series. And, of course, in awareness changes, too, there is the relation between awareness content and the time series; so that the content contains this relation as an essential element. The awareness, then, is of this relation also. But awareness of a relation of any sort is merely the inclusion of this relation in the awareness complex itself. How a relation may "get in" has already been pointed out.

Here again the literal accuracy of the vulgar expression shows itself. We say "a change takes place in a thing." Well; in this case a change takes place

in an awareness. There is no "change-object" relation between the change and the thing. There are, to be sure, all sorts of relations between the thing and what it does, between structure and function, but those are obviously not change-object relations. They are describable in their own various terms.

It is of the essence of psychokinetic complexes, as Activism apprehends them, to be aware of their own intensive changes, of their own content, because, as we have pointed out, from the very nature of the case awareness of change is always change of awareness. The immediate object of consciousness here is simply a part of the consciousness itself. The relation is a whole-part relation. Consciousness cannot, therefore, be defined as, or even involve, a relation between subject and object. For there is no specific "subject-object" relation.

Recent philosophical discussion has been much concerned over the question of Values. In general the contrast has been drawn between a world of causal mechanism and "a realm of ends"—purposes, ideals—in some sort a spiritual world, over and above, or set off against, the world of concrete realities. A good deal of all this, although, in the main, a healthy reaction against certain over-emphasized tendencies, appears nevertheless vaguely unsatisfying and over literary. The whole

subject, however, has been so much in the philosophic mind of late that at least a brief word should be said about it here.

We have already indicated how values and "ends", since they are activities, are efficient realities. They need not be, however, "spiritual" activities, for a telelogical order might well characterize even a purely "naturalistic" universe.[8] For the activist, moreover, they would be taken rather in the Platonic fashion, as independent meta-psychic beings logically prior to the activities of the lower planes.

Thus an æsthetic ideal—the ideal of beauty, for example—would not depend upon, or be created by, thought or awareness. As Emerson says, "The world is not painted or adorned, but Beauty is the creator of the universe." Beauty, like truth (as we have just seen) is characteristic of the "external order". The relations involved in it are not essentially dependent upon the relations obtaining upon the psychokinetic plane. The ethical ideal, especially, is an activity of high intensity—of great range. And it, also, like truth and beauty, although its significance in the existential world may hinge upon the presence there of a society of moral individuals, is not dependent upon any lower order for its own being.

[8] See "The Order of Nature". Lawrence J. Henderson. 1917. Harvard University Press.

Values, then, for Activism, are independent activities, as efficient and "objective" in their own way and according to their respective intensities as any other facts.

Closely connected with the problem of values, especially at this time of wide-spread suffering and personal sacrifice, is the specific question of Personal Survival.

Disguise our interest as we may, pragmatically this question is a vital one, and cuts deep in many directions. No philosophy, however scornful, can afford to ignore it altogether. Yet the question is after all an empirical question, and a single undeniable fact would upset at once all our fine-spun theories.

Perhaps, therefore, the most which can be expected from any philosophy is a statement as to whether or not it has a reasonable place for such a fact in its system, were such a fact proved to exist; and possibly, also, whether or not on the whole the trend of its cosmology tends towards the general assumption of such a fact's existence.

Now, indubitably, Activism has a place for personal survival. For a psychokinetic unitary complex could perfectly well exist in possession of its various activities whether or not it also formed, or

were in correlation with, an electronic or atomic complex upon the planes below.

Such an awareness complex would, of course, presumably be cut off (although even this does not necessarily follow) from the characteristic activities of the lower planes; but it would not be cut off from relations to the activities of its own plane or the planes above. Its total activity— its life—might conceivably be as full, or fuller than in that form in which we usually know it here. As an awareness complex it could conceivably still be in relation to other awareness complexes—discarnate, or possibly under peculiar conditions, incarnate—as well as be entirely aware of its own intensive changes.

But whether or not such conscious entities as a matter of fact exist, detached from the physical entities with which they are normally known to us as associated, is a question the decision of which rests upon empirical evidence independent of philosophic inquiry.

CHAPTER 10

CONCLUSION

At the end, here, of this slight and tentative essay it is perhaps well to gather up the threads, and to take a final brief survey of the philosophic garment which we have tried to weave.

According to the hypothesis which has been developed everything is considered as an activity—a "that" by reason of which difference is made, this difference being, in the world of process, nearly always some kind of a change.

According to our hypothesis also, activity, although a unifying conception universally applicable, is known to us principally, not in its universal form, but in specific instances, the specificity of which can be expressed by means of a principle of determination which we have called intensity. And we have defined intensity, in a somewhat technical way, as a complex of elements again themselves specified as amount, range, persistence and their derivative—exclusion; amount being quantitative, the greater or less activity involved in any given instance; range the number of other activities in respect to which any given activity is efficient—for which it is "that by reason of which" changes in them exist; exclusion the extent to which the given activity is independent, is not "influenced" by other activities; and

persistence the duration of a given activity, usually as a specific unitary complex.

Fundamentally these elements of intensity are relational, and might be further defined as the quantitative relations of a given activity to its own parts (amount), to other activities (range), the relations of other activities to it (exclusion), and to the time series (persistence).

All this of course rest upon the assumption of a real world of real activities, and Activism is therefore to this extent essentially realistic. It assumes the "objective" validity and "real" being of entities and relations, as well as the fundamental relational complexes of space, time, number, and change.

It assumes, moreover, a minimum entity in the existential world called a psychon — the unit of awareness. And it posits for this psychon, as an activity—a ground for change—an efficiency not confined to the merely passive capacity for receiving the minimum of psychic impression, but also an efficiency capable of being "that by reason of which change exists" in other psychons. To express, therefore, this "dynamic" element of awareness we have called the characteristic activity of the psychon psychokinesis.

This hypothesis, however, does not make knowledge essentially constitutive in the epistemological sense, for the existence of a psychon (or its com-

plexes) is independent of its relations to other psychons (or their complexes); since these other psychons according to specific conditions may, or may not, be included in its awareness, and vice versa. For although the conditions may be largely or exclusively psychokinetic in any particular instance, in other instances they may be altogether relational; and as a matter of fact are generally, as we know them in concrete experience, principally dependent upon the ubiquitous relations of time and space; while even the awareness relation itself turns out, upon fuller analysis, to be merely a peculiar sort of non-spacially inclusive, or whole-part relation.

The existential world of energy, "matter", and mind, then, is built up for the activist altogether out of its fundamental entities, the psychons, their complexes, and the relations involved in these complexes. All of these, nevertheless, are subsumed under the still more general conception of activity, and may therefore be differentiated and quantitatively determined according to their various intensities—namely, their amount, range, exclusion, and persistence, or any predominant one of these elements which may characterize them individually.

This world of entities, relations, and their resultant processes, however, does not show itself as a flat projection, but appears cut transversely into certain variously well defined levels, or planes, each of which

possesses, as its own architectonic unit, a basic complex of the units of the next more inclusive plane above. And, like Cæsar's Gaul, these planes may be broadly divided into three—the meta-psychic, psychokinetic, and physical planes—each one of which is logically prior, as well as cosmologically fundamental, to the plane or planes below. The sharpest break, however, is found between the meta-psychic plane and the planes beneath it, since the psychokinetic and physical planes together constitute the entire existential world as it is known to us.

Each of these planes, also, possesses its own characteristic activities and units; but the ultimate units of each are, in their turn, unitary complexes of the units of the next plane above. In the world of physical science this is obvious—the living organism, for example, being a unitary complex of cells, cells of molecules, molecules of atoms, and atoms of electrons. Activism merely pushes this conception a step further and defines the electron, in its turn, as a unitary complex of psychons—a still more fundamental sort of activity.

These unitary complexes, moreover, are found to possess characteristic intensities—efficiencies—over and above the mere sum of the efficiencies of their component units. On their own respective planes they are efficient as units—as simple wholes; and the characteristic activities of their planes are deter-

mined accordingly. Upon the psychokinetic plane proper, also, a consideration of its activities has led us to the attempted formulation of a somewhat detailed hypothesis of their nature and the relations between them.

Conscious entities, according to this hypothesis, are found to be unitary pyschokinetic complexes of such a sort that their awareness content is wholly determined by the specific intensity of the complex itself; this intensity, in turn, depending entirely upon an actual psychokinetic inclusion of whatever other activities form the content data. This inclusion, furthermore, may be either a manifestation of the activity of the complex in question itself, or, as is much more frequently the case, the result of its relations to external activities. It is, however, hardly necessary to add that the inclusion is not necessarily a spacial inclusion, although in sense perception spacial inclusion is involved.

So, finally, we find that the "awareness relation", about which there has been so much philosophic discussion, falls quite naturally into line with the theories of Activism, as merely a peculiar kind of whole-part relation—namely, psychokinetic inclusion.

In the chapter on Consciousness, also, the serious attempt was made to differentiate the various

psychic processes and data quantitatively, according to their various intensities.

In its treatment of philosophic problems, Activism, while in the main realistic, differs radically from other realistic systems in its cosmology. It is realistic, and not idealistic, since it holds that, in general, objects are essentially independent of the relations between them, and that consciousness is not constitutive. It differs from most realistic systems, and all materialistic ones, because, for it, the existential world is built up of awareness units. It agrees, however, with Realism in holding that not all activities are psychokinetic, since there is no reason to suppose that the ideal entities and relations of the meta-psychic plane are psychic in character.

On the other hand Activism may fairly be considered largely pan-psychic—at least in so far as psychokinesis is given the dominant role among activities, and the psychon is taken as the basic entity of the existential world. Its pan-psychism, however, is limited since it assumes a plane of independent meta-psychic activities. It clearly stands, also, with Idealism in that it maintains the essential free efficiency of conscious entities, since the unitary psychokinetic complex is, by its very definition as an activity, itself a "that by reason of which change occurs"; the extent to which

it is freely efficient depending on its intensity, and especially upon the intensive element of range.

It stands, in addition, as against the pragmatic philosophies, with both Realism and Idealism in upholding the existence, or "subsistence", of values and ideals as independent activities in their own sphere, capable also, as such, of intensive determination.

In regard to epistemology, it is realistic in so far as it holds that terms are independent of the relations between them; that knowledge is not essentially constitutive of the existence of objects known; and that there is, over and above the existential world, a world of independent meta-psychic entities.

From the very nature of its fundamental hypothesis, however, neither the epistemological problem nor the mind-body problem present their difficulties in quite the same way as for other philosophic systems; and for both of these problems, so far as they are immediately involved in its theory, it has its own peculiar solution.

Well; at last, what bearing has all this on practical life? The question is but too justly asked of any philosophic creed, as well as of philosophy in general, and, unfortunately for philosophy, too often asked in vain.

The activist hypothesis, however, would seem to have a quite distinct bearing upon practical

life. In the first place, for the activist, the world is a real world, full of real entities and relations of which we are actually aware as they really are, in spite of the many errors which we make in our interpretations of them. All these things, moreover, whether or not we are aware of them, are things which make their essential differences according to their degree and kind, so that the world is through and through an efficient and living world. These activities, furthermore, from the very nature of our definition of them, comprise the real unitary activities which we ourselves are, as well as the conditions which determine our environment, and the purposes and ideals which govern our conduct.

Not only, therefore, is the realm of physical energy efficient, but no less, in their own way, the realm of consciousness and the realm of ideals.

We live, then, in the world of activities independent in their various degrees, of which we ourselves are also specific examples, the springs of whose existence are not wound or unwound by some external force alone, but which wind themselves by reason of their own essential resilience.

No differently than all other activities, therefore, are we, just to that extent to which we make ourselves so, fundamentally free and self-determined. For activity is that which is self-determined, and we,

also, are "that". The only ultimate necessity is the necessity of being free. A sufficiently intense activity binds all other activities to its own purpose, every change to its own vital needs, since it is by reason of activity that change itself exists. Freedom, then, is not only a pragmatic, but an essential realty. It is fundamentally involved in the activities of every plane, so that the real efficiency of values and ideals, the validity and efficiency of consciousness, and the actual existence of conscious entities as living activities—all of these follow inevitably from the postulates of Activism.

That such a view of life must possess,—as even itself also, an efficient activity—a determining influence, can hardly be disputed. And if, as the activist holds, this philosophy of life is not only efficient but also true, there is scarcely a limit to the extent to which it might not affect our daily existence by the range of its intensity.

It gives us a world not only of what James picturesquely called "thickness", but of genuine significance, full undoubtedly of genuine struggle, evil, and suffering, but alive, self-sustaining, and fraught with "meaning"—awareness content—throughout. It gives us, also, a world in which real personal activities play their own essential parts, personal activities the extent of whose reality and the importance of whose roles depends primarily upon

their own psychokinetic intensities—a world, in short, in which despite many difficulties and dangers, any man can with justice feel secure in his own intrinsic capacities, and which he may well face with a brave heart.

APPENDIX

ACTIVISM AS A PRACTICAL WORKING HYPOTHESIS.

At the beginning of this essay Activism was described as a working hypothesis valuable in so far as it might be able to offer certain fresh, and possibly more adequate, solutions for some of the more obvious problems of philosophy. The immediate interest throughout the essay, therefore, has been chiefly theoretic. Activism, nevertheless, may not be also without its advantages in suggesting a method of approach to some, at any rate, of the more practical questions of psychology and psychiatry.

In the chapter on Consciousness there were indicated certain formulæ of "intensive" measurement, particularly in regard to the quantitative discrimination between sensations, not perhaps without usefulness. For if, in accordance with our theory, certain periodicities are actually certain colors or sounds, either as sensations or sense data, wherever they may occur, objective experiments upon the interrelations and combinations of these periodicities will furnish reliable knowledge in regard to their interrelations and summations as "subjectively" perceived—as psychokinetic processes. And if the objective data in any specific case should fail to correspond with the introspective report of

the subject, we should look for some abnormality such as color-blindness, tone-deafness, or possibly some more subtle psychokinetic disturbance; further experimental research into this lack of correlation not improbably disclosing the more exact nature of the derangement. For the advantage of the activist point of view lies in its method, which is essentially quantitative not only in its application to conscious phenomena regarded as behavior, but to their introspective aspect as well.

Again, as we have pointed out, the respective periodicities which characterize the different sensations, taken in conjunction with their relative rhythmic or arhythmic conditions, may prove to be important factors in determining the emotional coloring which so often appears inseparable from them. The unpleasant or exciting qualities of seemingly innocuous stimuli to certain subjects, music to the unmusical, the red rag to the bull, the smell of blood to some homicidal maniac—all these may possibly be described in "objective" quantitative terms.

Such "objective" description, moreover, might even become of practical moment in the diagnosis and treatment of some, at any rate, of the functional nervous disorders—as, for example, the so-called "affect" psychoses (manic-depressive), where nearly

all the reactions of the patient are notably characterized by a painful (arhythmic) feeling tone.

In these cases a careful selection of the stimuli which still possess for the patient the power of arousing rhythmic responses, and the accurate discrimination between these stimuli and the remaining stimuli which appear abnormally as arhythmic, might not only aid in the individual diagnosis, but possibly even suggest treatment—such as placing the patient in continued subjection to the beneficial stimuli, thus tending to reëstablish a more normal rhythmic neural (or psychokinetic) condition, and building up, by habit, a new system which the older arhythmic habits would find it more and more difficult to disarrange.

It is, furthermore, not impossible that experimental investigation along these general lines—*i. e.*, a differential analysis of the normal and pathological responses to rhythmic stimuli—might assist in determining at least some of the now obscure causes which produce the milder forms of psychoneurosis.

For it seems clear that a normally rhythmic stimulus must become transformed in some way in order to acquire an arhythmic quality. This transformation might conceivably take place in the efferent nerve tracts due to pathological conditions there —lack of tonus or actual poisoning of the fibres; to abnormal functional conditions at the cortical

centers; or, possibly, to a purely psychological (psychokinetic) situation.

Should we, therefore, be able to discover certain stimuli, normally rhythmic (of pleasant emotional tone), which would appear arhythmic under conditions of artificially produced nerve poisoning, or lack of cortical blood circulation, or psychological disturbance hypnotically induced in a normal subject, we might be able to discover by a process of elimination the more immediate causes of the transformation.

Concerning the modus operandi of hypnotism and suggestion, also, about which so little is known at present, the activist hypothesis might have some contribution to make.

To take a concrete example. A subject under hypnosis is shown a plain white card, and the suggestion made to him by the hypnotist that he should see it as blue, whereupon he sees not a white card, but a blue one. Now what happens here would seem to be as follows: The word "blue" suggested by the hypnotist at once gives rise, for the subject, by a perfectly normal process of association, to an image of blue. This image, as we have contended, consists of a certain definite periodicity—*i. e.*, that periodicity which *is* blue wherever it may be, in this case in the subject's psychokinetic complex.

Due, however, to the low general intensity of the subject's psychokinetic activity—the dream-like condition—superinduced by the hypnotic trance, the specific intensity of the suggested image so fills for the moment the attentive field, is relatively so great, as to cause the image to take on the clearness and permanence of an actual hallucination. That this hallucinatory blueness is seen upon the surface of the card is quite natural, as for the moment in question the card, the image of blue, and the suggested association between the two, occupy almost exclusively the subject's attention.

An image of blue suggested to a normal subject remains merely an image by reason of its low relative intensity. The relatively high intensity and hallucinatory character of the hypnotic subject's blue is due entirely to the low general intensive conditions of the hypnotic trance.

But how is the hypnotic trance itself induced? We know of course the empirical methods employed in producing it—gazing fixedly at some bright object, internal strabismus, sudden words of command, and the like. What actually takes place, however, neurally or otherwise, is a mystery. "Suggestion" is merely a catchword to cover our ignorance.

Yet here again Activism may offer at least a hint. The normal condition of the human mind (whatever its relation to the nervous system may be—inde-

pendence, identity, or some unknown form of correlation) is a condition of great, although highly unstable, intensity, bombarded on every side by a multitude of impinging stimuli, and busily occupied in the essential processes of integration and selection. In moments of relaxation, however, in day dreaming, sleep (as a rule), and such conditions as the hypnotic trance, the general intensity is considerably lowered. The "amount" of psychokinesis is obviously less—the mind is closed to many external stimuli. The "range" is less—the organism "acts upon" fewer objects not itself. The "persistence" is less—conscious data linger but briefly in the attentive field. The "exclusion" is also less—the mind has less power, owing to its decreased intensity, actively to exclude stimuli, although its general condition has cut off many of the sensory channels that are open when it is fully "awake."

Now in normal sleep these sensory channels are deliberately blocked. The eyes are closed, the body placed at rest, the attention allowed to wander, "hypnagogic" images are allowed free play. For inducing the hypnotic condition, however, a different method is employed. The intensive lowering here is brought about, not by a general shutting out of impinging stimuli, but, rather, by the focussing of the attention upon a single stimulus, or a single complex of stimuli, so increasing the intensity of

that part of the subject's psychokinetic complex involved that the remainder of the complex sinks to a relatively lower intensive level.

A crude physical analogy would be the application to a patient of an electric current strong enough to drive all other sensory stimuli into the background—reduce them relatively to a lower level of intensity.

This condition of a partial specific intensive increase, with the concomitant general intensive decrease, can be obtained by various methods for different subjects (crystal gazing is an example), but all these procedures are fundamentally similar.

It may also be mentioned here that this description, if correct, furnishes an explanation why it is so difficult to hypnotize the insane or the feeble-minded. It is, of course, because the artificial creation in these pathological subjects of a psychokinetic sub-complex of the necessary high degree of intensity is almost impossible to accomplish, since either the whole complex is at such a fixed low level (as in the feeble-minded) or already so dominated by a sub-complex of high intensity (illusion, or "fixed idea", as in the insane), that there is no opportunity for a fresh sub-complex to overcome these unfavorable intensive conditions.

This brief sketch of the theory of Activism as a working hypothesis, possibly applicable to some of the practical problems which confront the experi-

mental psychologist and the psychiatrist, is, of course, a merely tentative suggestion.

Should the hypothesis prove practically valuable, however, there are many other questions, besides those so cursorily touched upon, for the solution of which Activism, with its quantitative formulæ, might prove of material assistance.

ACTIVISM AND RELATIVITY

Most of the philosophic implications of the Principle of Relativity have not as yet been developed. It is likely to require, moreover, a mental equipment of no mean order for the task of abstracting purely verbal deductions from the highly technical mathematical formulæ in which the principle is now set forth.

Since the present essay was written, however, the Principle of Relativity has attracted wide-spread scientific attention, due largely to its recent brilliant empirical confirmation by the astronomers. It may not be altogether superfluous, therefore, to point out some of its possible bearings upon certain specific solutions offered by the hypothesis of Activism.

Arising originally out of mathematical considerations suggested by such experiments in physics as those of Lorentz, and Michelson and Morley, Relativity acquired later a much wider significance in the formulæ developed by Minkowski and Einstein.

Very briefly these formulæ, which are usually stated in terms of vector analysis,[1] are based upon

[1] They may also be expressed in quarternious or analytic algebra. See "Relativity and the Electron Theory." E. Cunningham. Longmans, Green & Co., London, 1915.

the assumption that space and time are not independently different, in the sense in which we have been hitherto accustomed to consider them; but for the purposes of physics and its measurements at any rate, can be much more accurately defined as a single four-dimensional complex, mathematically analogous to a space of four dimensions. As Minkowski put it, "From henceforth, space by itself, and time by itself, are mere shadows, and only a blend of the two exists in its own right".[1]

Relativity holds also (hence its name) that since time is only a dimension, element, or "coördinate" in this space-time complex, there can be no "absolute" standard of time or motion in the Newtonian sense, and that consequently any specific velocity is relative only—dependent upon the standpoint of the observor, or the "frame of reference" to which it is referred.

The immediate bearing of all this upon the theory of physics in general, and astronomy in particular, is too complex and difficult to discuss here, even if the writer were technically equipped. Nevertheless certain tentative deductions may be drawn which are not without interest to the general philosophic reader.

[1] Raum und Zeit 1908. Reprinted in "Das Relativitäts prinzip" Leipzig 1913.

The most obvious of these is the confirmation of the value of a fundamentally relational, as opposed to a substance-quality, point of view, in the solution of actual scientific problems, and the consequent suggestion that this point of view—so vitally a part of Activism—may prove equally valuable in its application to the wider problems of cosmology. For if, as Activism holds, relations are not only genuine activities, but essentially constitutive of the various unitary complexes which make up the existential world, then the relativistic method must necessarily be involved in the investigation of these problems.

So, for example, since according to the relational attitude Science no longer considers the ether (if indeed it considers it at all) as the "subject of the verb to undulate", Philosophy also need no longer consider that periodicities—rhythmic changes—are dependent for their occurrence upon some material, or other "substance" in which they must take place.

For it should be mentioned that Relativity, as well as Activism, holds that a motion to be real need not be the motion of a physical particle. All that is necessary is that it should be an observable motion. It might, perfectly well, be the motion of something quite "immaterial"—as a psychon.

It points out, also, that, since time and space should not be considered as independent of each other, they are, empirically at any rate, not to be

found without that which is essentially involved in any time-space complex—namely, motion. Should this be true, motion would appear as fundamental in the physical world—a world thus through and through dynamic, a world of activity; and psychokinetic change there would always involve, as its correlate some form of it.

Yet while Relativity thus insists on the fundamental role of motion in the physical world, this need not imply that psychokinetic change *on its own plane* might not occur without it. For it is interesting to note here that Clerk-Maxwell's equations for electro-magnetic change—which is *not* a change of motion—have, unlike the Newtonian formulæ, remain unmodified by Relativity, thus indicating that change is logically prior to physical motion.

A further philosophic implication of Relativity, still straight in line with the Activist hypothesis, is that the existential world of motion, space, and time, can be perfectly well described—in fact *must* be described in order fully to explain three-dimensional phenomena—as a four-dimensional world of fundamental efficiencies.

The reality of higher dimensional entities has always been insisted upon by realistic philosophies which, like Activism, have frequently pointed out the inadequacy of the Aristotelian "substantive" attitude; and it now appears as though Science, as

well, was being forced to break away from the older logical framework.

Relativity, then, would presumably find no logical objection to the hypothesis of Activism, with its higher dimensional entities, such as psychons and relational complexes; since these latter, at any rate, are fundamental to the whole relativist point of view. On the contrary the Principle of Relativity has already been the means of furnishing a striking empirical confirmation of at least that portion of the Activist hypothesis which deals with the relational situation.

WHAT IS ACTIVISM?

A SUMMARY

Activism is a new philosophy, or, at the least, a new point of view in philosophy—a new way of presenting certain old ideas.

It possesses some elements in common with Realism—especially Neo-Realism; some characteristics in common with Pan-psychism; and some in common with objective Idealism; but it differs in many important respects from them all.

It holds that awareness is the fundamental reality of the "existential" world—the world of physical objects and conscious experience, but not because that world owes its being to some Thinker, or thinkers (Idealism), but because the ultimate entities of which it is composed are minimum units of awareness—called "psychons;" these psychons when organized into electrons forming the basic units of the physical world, and when organized into certain other unitary complexes forming individual minds.

It holds, however, as opposed to Idealism and most forms of Pan-psychism, but in common with Neo-Realism, that there are also other realities besides the psychons—namely relations, and "meta-psychic" entities, such as the manifolds of space, time, and the numerical series—and that these are not essentially psychic in nature.

It holds also, with Realism, that both the existential world of consciousness and physical objects, and the "subsistential" world of relations and meta-psychic entities are "objectively" real, and not dependent for their reality upon being known. In other words it holds that knowledge is not essentially constitutive of its objects.

It describes the universe, so far as actually discovered, as consisting of certain well defined levels, or "planes," with their sub-planes; the three principal divisions being the physical, psychic, and meta-psychic planes, each of which possesses its characteristic basic units—respectively, electrons, psychons, and relations.

According to this description it holds that, in the existential world at any rate, the basic units of each plane and sub-plane consist of unitary complexes of the basic units of the plane (or sub-plane) next above (proceeding "upwards" from the level of "matter"); these unitary complexes of higher plane entities behaving, upon their own plane, as simple unit entities.

It holds, furthermore, that this characteristic behavior of the unit entities of each plane, or sub-plane, is something *sui generis* and different from any possible behavior for the unit entities of the plane above, unless these higher plane units are

organized into those specific unitary complexes essential for the formation of the lower plane units.

As for example, a living cell behaves as no other congeries of molecules can behave, a molecule of protoplasm as no other congeries of atoms, an atom as no other pattern of electrons, and an electron as no other aggregate of psychons.

It holds, moreover, that such a progressive organization is impossible without organizing relations—the efficient activities of the meta-psychic plane. And it holds, especially, that all these entities and relations, both singly and in their various complexes, make a real difference somewhere, and therefore constitute real efficiencies. Hence they are called "activities," and the philosophy which so considers them "Activism."

It defines activity as "that by reason of which change exists"; and it considers that activity, as so defined, is a conception universally valid for the description of all possible objects of which we can become aware, including awareness itself.

It holds, also, that activities of all kinds can be quantitatively differentiated by means of a certain characteristic which they possess in common known as "intensity." And it defines intensity as consisting of four elements, three of which are primary and one derivative.

These elements it calls, respectively, "amount," "range," "persistence" and "exclusion"; amount being the numerical quantity of activity units (upon any plane) which compose a given object; range the numerical quantity of other objects to which the given object can "make a difference"; persistence the length of time (duration) through which the given object exists as such an object; and exclusion the inherent capacity of the given object to bar out any activities which tend towards its own disintegration.

Such a principle of "intensive" quantitative differentiation, it holds, can be applied not only to material or physical objects, but also to the phenomena of consciousness. And it further holds that the use of such a quantitative method will be of substantial assistance in the solution of many problems in psychology and psychiatry, both experimental and theoretic, including the so-called mind-body problem; especially since it believes that it has been able to furnish, for the first time, a logical explanation of the interrelations between conscious processes and physical motion.

Specifically, it maintains that the characteristic activities of those unitary complexes of psychons which constitute individual human minds can be more accurately defined; and that mental processes —whether considered introspectively or in their rela-

tion to the nervous system (whatever that relation may be)—can be more fully described, than by any of the older methods.

In its insistence on an essentially relational point of view and the efficiency of higher dimensional activities, as well as upon the fact that change and motion may occur without being the change or motion of a physical particle, but in order to be real need only be an observable change of motion, Activism is straight in line with the Principle of Relativity which has recently received so brilliant an empirical confirmation by Physics and Astronomy.

And, finally, Activism believes that a further development of its fundamental conceptions—the application of its universal formulæ of quantitative description—together with its attitude towards the world order, the efficiency of organizing relations, and the dynamic reality of ideals and values, may prove of practical as well as theoretic importance in solving many of the scientific and social problems which confront us to-day.

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